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THE

DUBLIN JOURNAL

OF

MEDICAL SCIENCE;

EXHIBITING

A COMPREHENSIVE VIEW

OF THE

LATEST DISCOVERIES

IN

MEDICINE, SURGERY, AND THE COLLATERAL SCIENCES.

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The following works have been received.

1. Elements of the Practice of Medicine. By C. Lendrick, M.D. Part II.
2. On the Nature and Structural Characteristics of Cancer. By J. Muller, M.D. Translated by C. West, M.D., London.
3. An Essay on the Treatment of some Affections of the Prostate Gland. By R. A. Stafford, M.R.C.S., &c.
4. The Cyclopædia of Anatomy and Physiology. Part XIX.
5. The New York Journal of Medicine and Surgery.
6. On the Cure of Squinting, &c., being the half yearly Report of the Royal Westminster Ophthalmic Hospital. By C. W. Guthrie, jun., M.R.C.S.
7. Practical Remarks on the Causes, Nature, and Treatment of Deformities of the Spine, &c. J. Amesbury, M.R.C.S.
8. The Medical Portrait Gallery. Parts XXIV. and XXV. By T. J. Pettigrew, F.R.S., &c. &c.
9. The Maternal Management of Children. By T. Bull, M.D.

ERRATUM

In Mr. Smith's paper.

Page 3, line 15, *for* fibro-cylinder *read* fibro-synovial cylinder.

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2. The Library of Medicine. Arranged and edited by Alexander Tweedie, M.D., F. R. S. London.
3. Remarks on the Surgical Practice of Paris. By W. C. Markham, M. D.
4. Medical Communications of the Massachusett's Medical Society. Vol. ii. Parts II. & III.
5. A Practical Treatise on the Diseases peculiar to Women. By Samuel Ashwell, M. D.
6. Essay on Tobacco. By H. W. Clelland, M. D.
7. Die Diagnostische Bedeutung der einzelnen Symptome der hitzigen Hirnhöhlenwassersucht der Kinder. Von Dr. Heinrich Wolff. Bonn, 1839.
8. La Gazette Medicale.
9. The Medico-Chirurgical Review. Oct. 1840.
10. The British and Foreign Review. Oct. 1840.
11. The Lancet.
12. The Medical Gazette.
13. On the best Method of obtaining Vegetable Preparations for Medical Use. By E. Bently. London.

The remaining five Reports of the Meetings of the Pathological Society of Dublin, for the Session 1840, will appear in the ensuing Number.

ERRATA

In Mr. Power's Cases.

Vol. xvii. No. 49, Page 144, eleven lines from the bottom, *for* constitutional external disturbances *read* constitutional *or* external disturbances.

—— 146, eleven lines from the bottom, *for* tight bandage *read* light bandage.

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The Editors beg to acknowledge the receipt of Dr. R. Quain's and Mr. Maclise's splendid Plates of the Arterial System.

Bibliographic Notices of Dr. Hodgkins' Lectures on the Morbid Anatomy of the Serous and Mucous Membranes, and of the Cyclopædia of Practical Medicine, edited by Dr. Tweedie, will appear in our next Number.

The following Works have also been received:

1. Descriptive Catalogue of the Preparations in the Royal College of Surgeons in Ireland. By John Houston, M. D., Curator of the Museum, &c.
2. An Inquiry into the Efficacy of Digitalis, in the Treatment of Idiopathic Epilepsy. By E. Sharkey, M. D., A. B.
3. The Accoucheur's Vade Mecum. By Travers Burke, M. D.
4. The Retrospective Address in Surgery, delivered before the Provincial Medical Association. By J. H. James, Esq., Surgeon to the Devon and Exeter Hospital.
5. The Elements of Materia Medica. By J. Pereira, M. D. Part I. London. 1840.
6. Prout on Stomach and Urinary Diseases.
7. Williams on Diseases of the Chest.
8. Wilson's Anatomist's Vade Mecum.
9. Ramsbotham's Midwifery Lectures, Nos. IX. X. XI. XII.

THE

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OF

MEDICAL SCIENCE,

1 SEPTEMBER, 1840.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Observations on the Diagnosis and Pathology of Fractures of the Neck of the Femur.* By ROBERT WILLIAM SMITH, A. M., M. R. I. A., Lecturer on Surgery at the Richmond Hospital School of Medicine; Medical Inspector to the Talbot Dispensary; Surgeon to the Island Bridge Lunatic Asylum, &c., &c.

ALTHOUGH to many it may appear superfluous again to bring before the notice of the Profession, a subject upon which so much light has recently been shed by the successful efforts of Adams; although they may consider it a fruitless toil again to open up a mine which the labours of Cooper, Colles, Stanley, Langstaff and Guthrie, of Cruveilhier, Dupuytren, Chaissaignac, and Vidal, have apparently exhausted, they may be assured that the subject which I am about to enter upon still affords ample materials for consideration: and if I assert, that it is still involved in a certain degree of obscurity, which not

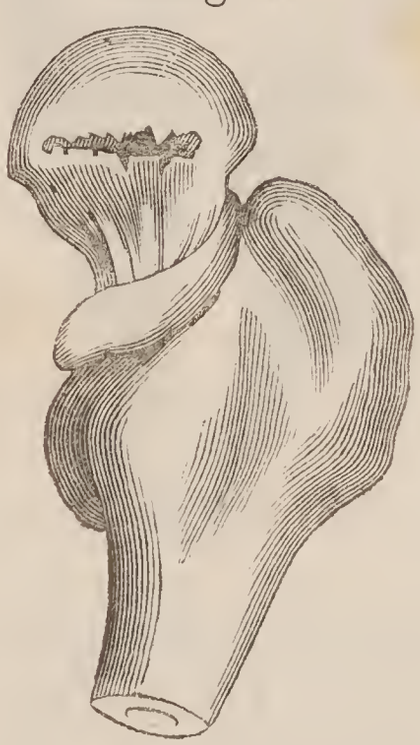
unfrequently leads to errors in diagnosis, let me not be supposed to undervalue the labours of the justly distinguished men to whose names I have referred. Upon a former occasion, I recorded in the pages of this Journal* the results of my experience upon the subject of the diagnosis of fractures of the neck of the femur, and I then arrived at certain conclusions, some of which were opposed to the opinions promulgated by the highest authorities; these conclusions were founded upon the examination of thirteen specimens of fracture of the neck of the femur, contained in the Museum of the Richmond Hospital; but the opportunities which I have since enjoyed of investigating this subject having been most ample, and having now placed in the Museum upwards of forty preparations illustrative of the injury in question, I have been induced to submit to the Profession the results of this enlarged experience, in order to establish upon a more extended, and therefore more secure basis, the opinions which I originally maintained. Nor am I without hope, that I shall be able to place the diagnosis of certain varieties of these important injuries in a clearer light than has hitherto been done. I propose, in the first instance, to describe the preparations contained in the hospital collection, accompanying the description with a conscise history of the symptoms which each case presented during the life of the individual, and then offer such observations, and deduce such general conclusions, as the series appear to suggest.

CASE I.—*Intracapsular Fracture of the Neck of the Femur.*

Laurence Maguire, æt. 40.—Fracture of the neck of the femur within the capsular ligament, traversing the bone obliquely from above and before, downwards and backwards. Anteriorly the fracture has passed through the investing cartilage of the head of the bone; the fibro-synovial reduplications remain unbroken, with the exception of a very slight laceration anteriorly; the synovial membrane of the articulation was highly

* Vol. vi.

vascular. A large abscess existed betwen the rectum and bladder; and the mucous membrane of the latter organ was inflamed. In this case the patient had been thrown to the ground with considerable violence. The usual symptoms of fracture of the neck of the femur were present; the foot was everted, and the limb was shortened half an inch. Ten days after the occurrence of the accident severe febrile symptoms set in, and rapidly assumed a low typhoid character. The tongue was dry and brown, and the pulse scarcely perceptible: severe and frequent rigors, with retention of urine and excessive irritability about the neck of the bladder, indicated the formation of matter in the vicinity of that organ. The case terminated fatally about a fortnight after the occurrence of the accident. In this case the broken surfaces remained in apposition, owing to the integrity of the fibro-cylinder surrounding the neck of the bone.



Case II.—*Intracapsular Fracture of the Neck of the Femur.*

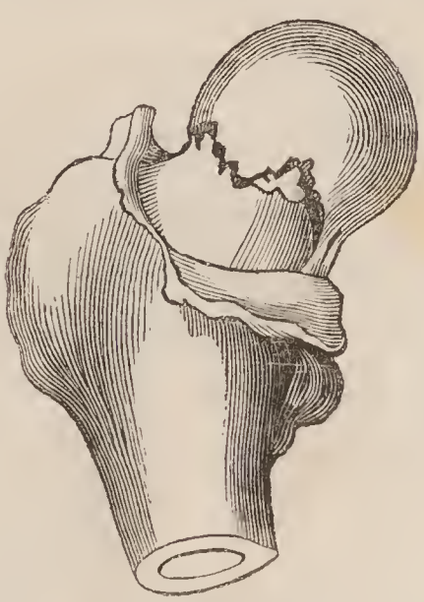
William Collins, æt. 36.—Fracture of the neck of the femur within the capsular ligament, passing through the cervix transversely with respect to the direction of its long axis; the fibro-synovial reduplications have been torn throughout their whole extent upon the front of the neck of the bone, but posteriorly have remained entire, and thus prevented the complete

separation of the fragments. The articulation contained only a small quantity of synovia; and its lining membrane was preternaturally vascular. The injury was caused by a fall, four days previous to the admission of the patient into the hospital. The foot was everted, and the shortening of the limb amounted to three-quarters of an inch. Shortly after his admission the patient was attacked with irritative fever; the tongue became furred; the bowels constipated; the pulse quick and feeble. He was extremely restless, and the joint was very painful: the fever continued; the tongue became brown; sordes collected about the lips and gums, and his countenance was sunken and anxious; he became comatose, and died upon the seventeenth day after the occurrence of the accident.

Case III.—*Intracapsular Fracture of the Neck of the Femur.*

Thomas Maguire, æt. 84.—Fracture of the neck of the femur within the capsular ligament, and close to its junction with the head of the bone, a small portion of the compact structure of which has been broken off in front; the fibro-synovial reduplications have been torn anteriorly, but remaining perfect internally and posteriorly, hold the fractured surfaces in apposition; blood was effused between the fragments from the ruptured vessels of the cancellated tissue. The third lobe of the prostate gland was enlarged, and divided by a deep fissure into

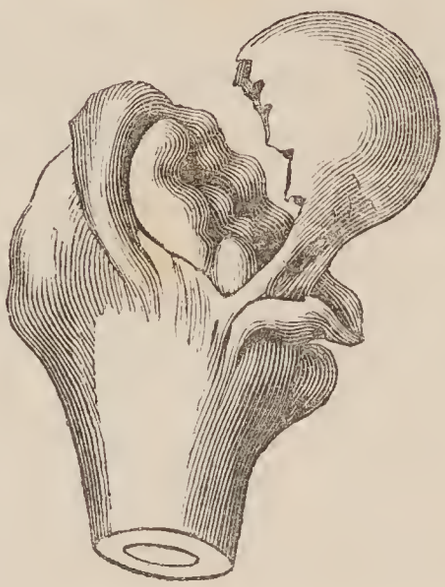
two unequal portions; the mucous membrane of the bladder was extremely vascular, and its muscular fibres hypertrophied; it contained two small calculi. The left ventricle of the heart presented an example of concentric hypertrophy, and its auricular opening was contracted by the deposition of calcareous matter in the mitral valves: the aorta, from its valves to its bifurcation, was thickly studded with calcareous and atheromatous deposits. The fracture of the neck of the femur was caused by the patient's having tripped over some slight obstacle while walking across his room; he did not fall to the ground. The injury was followed by irritative fever; and the patient died a fortnight after the occurrence of the accident.



Case IV.—*Intracapsular Fracture of the Neck of the Femur.*

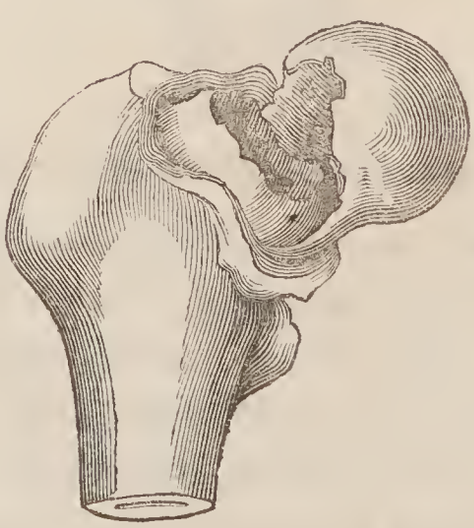
Dorah Campbell, æt. 75.—Fracture of the neck of the femur within the capsular ligament, encroaching a little upon the head of the bone; the edges of the broken surface of the inferior fragment have been rounded off, and small irregular deposits of bone have been formed upon the surface of the cervix; the fibro-synovial reduplications have been torn throughout the greater part of their extent; lymph was effused upon the broken surfaces, and blood in the acetabulum and upon the capsular ligament. The injury was the consequence of a fall upon the hip; the shortening of the limb amounted to one inch. The patient

died of bronchitis two months after the occurrence of the accident.



CASE V.—*Intracapsular Fracture of the Neck of the Femur.*

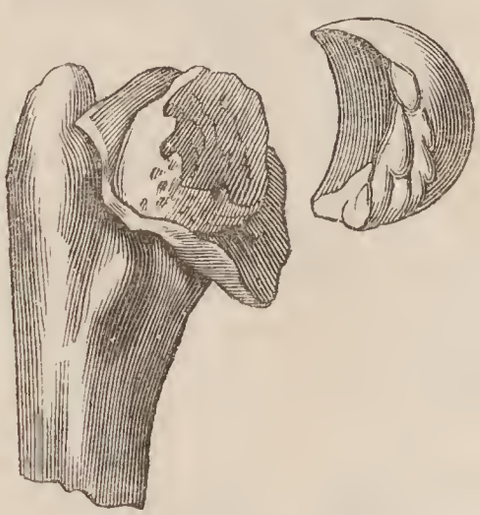
Mary Gill, æt. 80.—Fracture of the neck of the femur within the capsular ligament, close to the head of the bone. The broken surface of the superior fragment is deeply excavated; the reduplications of the synovial and fibrous membranes have been lacerated throughout their whole extent upon the anterior and superior surface of the neck of the bone, but are



perfect posteriorly, and along the concavity of the arch of the neck of the femur. The limb was shortened half an inch. The history connected with the injury is unknown.

CASE VI.—*Intracapsular Fracture of the Neck of the Femur.*

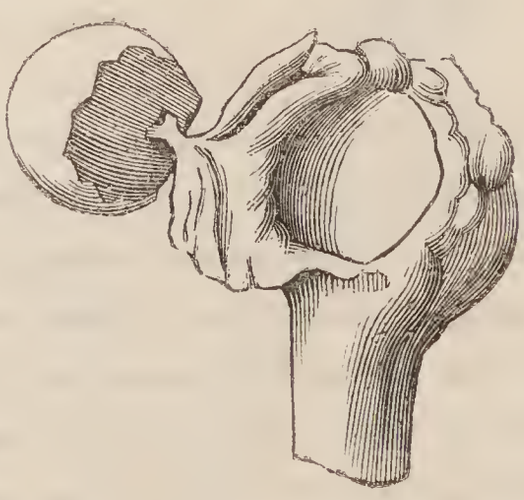
Esther Christie, æt. 60.—Fracture of the neck of the femur within the capsular ligament. The superior fragment has been removed to the level of the acetabulum, its broken surface has become smooth and dense, and presents a concavity and a convexity, the latter being situated posteriorly. The greater portion of the femoral fragment has been absorbed, and the surface of the fracture is extremely irregular, and covered with a fibrous structure; a small portion of the compact tissue lining the superior surface of the neck of the bone, has been laid down upon the broken surface of the lower fragment, and has been united to it by the fibrous tissue already mentioned. The direc-



tion of the fracture is oblique, from above and before, downwards and backwards; the fibro-synovial folds have been destroyed throughout the whole cricumference of the neck of the femur. The capsular ligament is thicker than natural, and its interior presents a rough and flocculent appearance; a thick concave plate of bone, about three inches in length, and nearly an inch in breadth, has been formed on the anterior surface of the capsule; the ligamentum teres is the sole remaining attachment of the head of the bone. Nothing is known of the history connected with the preparation; but it is obvious from the appearance of the joint, that the injury had occurred long before the death of the patient. The limb was shortened half an inch.

CASE VII.—*Intracapsular Fracture of the Neck of the Femur.*

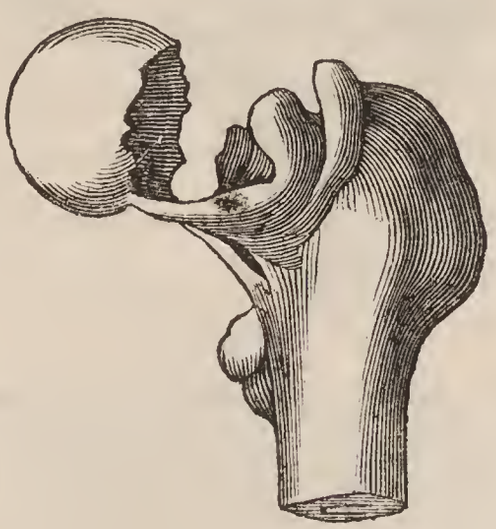
Mary Lamb, æt. 80.—Fracture of the neck of the femur within the capsular ligament, with absorption of the head of the bone to the level of the brim of the acetabulum; its under surface is slightly convex, and in some places covered with a dense, polished enamel, in others with a fibrous or ligamentous structure; the femoral fragment has been altogether absorbed; and the surface of the bone from which, in the normal state, the neck of the femur springs, has been formed into a widely expanded surface, slightly concave, and throughout the greater part of its extent invested by a fibrous structure: ligamentous bands pass from the internal surface of the capsule to both the superior and inferior fragments. The capsule is much thickened, and in some places converted into a semi-cartilaginous structure. The injury was the result of a fall upon the trochanter; the shortening of the limb amounted to three-quarters of an inch. The patient died of bronchitis and anasarca twelve months after the occurrence of the accident; and at the period of her death, the injured limb was two inches shorter than the other.



CASE VIII.—*Intracapsular Fracture of the Neck of the Femur.*

Margaret Burke, æt. 90.—Fracture of the neck of the femur within the capsular ligament. The under surface of the superior fragment is slightly excavated; the lower fragment is comminuted, and the fibro-synovial reduplications have been lacerated

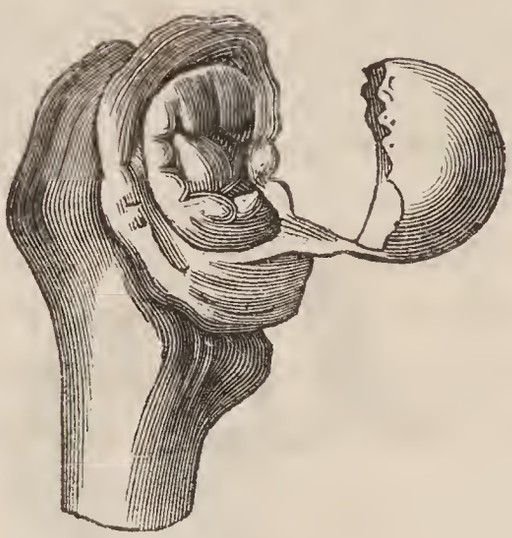
almost throughout the whole of the circumference of the neck of the bone; their attachments are preserved only along the concavity of the cervix, and here have been penetrated by a spicula of bone connected with the lower fragment: blood in considerable quantity was poured out between the fragments, and among the muscles surrounding the articulation. The shortening of the limb amounted to half an inch. The patient died of sloughing of the nates upon the day following her admission into hospital, and a fortnight after the occurrence of the accident.



CASE IX.—*Intracapsular Fracture of the Neck of the Femur.*

Margaret Myler, æt. 78.—Fracture of the neck of the femur within the capsular ligament, close to the line of junction of the cervix with the head of the bone; a thin layer of the compact structure of which, covered by its cartilage, hangs down from the margin of the fracture; the under surface of the cotyloid fragment is excavated, and hard and dense in its structure: almost the entire of the femoral fragment has been absorbed, and several portions of its compact structure appear to have been turned in upon the fractured surface, and become united to it; the fibrous reduplications are entire only along the concavity of the cervix; the capsule is greatly increased in thickness. The amount of retraction of the limb, which immediately followed the receipt of the injury in this case, was only a quarter of an inch. The patient died two months after the

occurrence of the accident: the prominent symptoms during the progress of the case having been insomnia, prostration of strength, thirst, and occasional delirium; the integuments covering the sacrum sloughed, and for some time before death purulent matter was voided with the urine.



CASE X.—*Intracapsular Fracture of the Neck of the Femur.*

A female, æt. 65.—Fracture of the neck of the femur within the capsular ligament, with absorption of the neck of the bone. The head of the femur has lost its globular form, and is ex-

tremely irregular upon its surface, the slightest pressure is sufficient to break down its texture, which is copiously infiltrated with oil; the cells of the cancellated tissue are enlarged; the bone presents a remarkable instance of senile atrophy; the ace-

tabulum is irregular in form, deepened, and deprived of its cartilage; the glutæal muscles were pale and atrophied, and an unhealthy adeps occupied the place of the muscular fibres in many situations. The patient had been bedridden for many years before her death; the limb was shortened one inch, and the foot everted.

CASE XI.—*Intracapsular Fracture of the Neck of the Femur.*

Patrick Doolan, æt. 60.—Fracture of the neck of the femur within the capsular ligament. The head of the bone is united to the acetabulum by an imperfect anchylosis, the bond of union being a dense ligamentous structure. The lower surface of the cotyloid fragment is convex, representing the half of a sphere looking downwards; the neck of the bone has been com-

pletely absorbed, and a large shallow socket has been formed in the widely expanded surface of the lower fragment, to receive the convex surface of the pelvic extremity of the fractured bone: both these surfaces are smooth and polished, and possess the hardness and density of enamel; the capsular ligament is extremely thick. The limb was two inches shorter than the other, and the eversion of the foot was complete. The fracture had existed for seven years previous to the death of the patient: he was admitted into the hospital labouring under aneurism of the thoracic aorta, which proved fatal without rupture of the sac;

it sprung from the first portion of the arch, and was about as large as an orange.

Case XII.—*Intracapsular Fracture of the Neck of the Femur.*

Michael Curry, æt. 40.—Fracture of the neck of the femur within the capsular ligament, with absorption of a considerable portion of the broken surface, and complete destruction of its fibrous and synovial investments: the interarticular ligament was the only connexion of the head of the bone which remained perfect; all the tissues which enter into the composition of the joint had been the seat of acute inflammation. The upper portion of the shaft of the bone, for about two inches below the cervix, presented evidence of acute osteitis; the periosteum was detached, the osseous tissue eminently vascular, and its surface presented a corroded, worm-eaten appearance, owing to

the removal of the compact structure, and the exposure of the cancellated tissue. Purulent matter existed beneath the separated periosteum, and an enormous abscess surrounded the articulation, which was itself filled with pus and flakes of lymph; the capsular ligament was separated from the anterior intertrochanteric line, and thus a communication was established between the external abscess and the interior of the joint. The patient was admitted into the hospital, December 5th, 1837; the injury was received (while he was in a state of intoxication) on the 15th of November. When he was admitted into the hospi-

tal he laboured under a high degree of fever, which daily increased, and was accompanied with rigors and delirium: the hip joint was the seat of most excruciating agony, and the tension and swelling were very great. Under the influence of the fever he gradually sunk, and died on the 16th December, one month after the occurrence of the accident. The foot was everted, and the limb shortened one inch and a quarter.

CASE XIII.—*Intracapsular Fracture of the Neck of the Femur.*

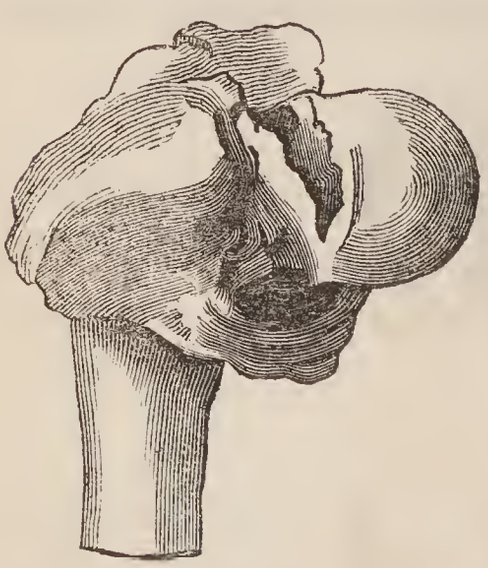
Matthew Reilly, æt. 46.—Fracture of the neck of the femur within the capsular ligament, encroaching in some places upon the cartilaginous investment of the head of the bone, the under surface of which is deeply excavated and covered by a false membrane of considerable thickness; a portion of the inferior fragment has been absorbed, and its fractured surface is for the most part covered by a fibro-cartilaginous structure; the fibro-synovial folds have been lacerated in front and inferiorly: poste-

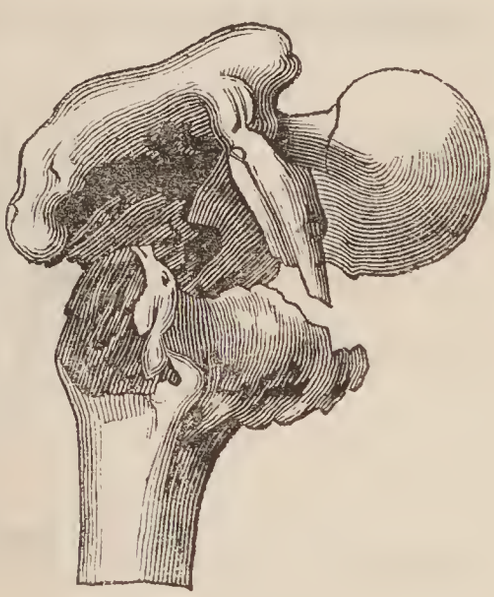
riorly, and corresponding to the upper surface of the cervix, they remain entire; and in the latter direction, the elevation of the trochanter and lower fragment has brought them into contact with the fractured surface of the latter, and they have become intimately connected with the fibrous structure already mentioned as existing upon the surface of the femoral fragment: the neck of the bone is invested by a layer of lymph of considerable thickness, and presenting a fimbriated appearance. The

limb was shortened half an inch. The patient died four months after the receipt of the injury.

CASE XIV.—*Intracapsular Fracture of the Neck of the Femur.*

A female, æt. 55.—Fracture of the neck of the femur within the capsular ligament. The fracture passes obliquely from above and within, downwards and outwards. The inferior termination of the line of fracture is a little external to the capsule at one point. The fibrous investment of the neck of the bone has been lacerated superiorly, but is for the most part perfect elsewhere; the trochanter major has been separated from the shaft of the femur, and the neck, at its junction with the shaft, is encircled with a bony collar, principally constituted by the recent deposition of osseous matter. The limb was shortened one inch. I was unable to procure the history connected with the accident.

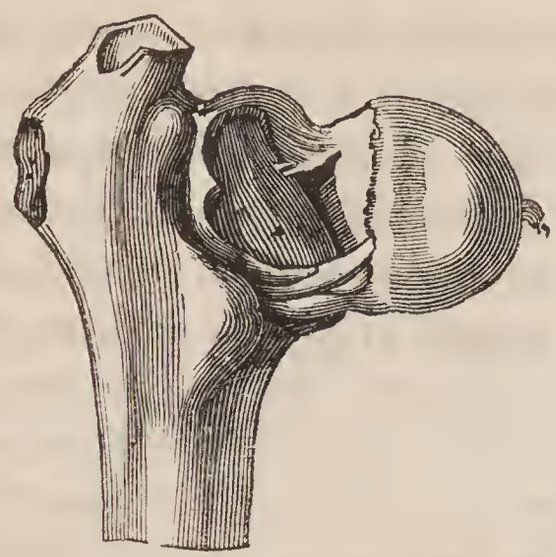




CASE XV.—*Intracapsular Fracture of the Neck of the Femur.*

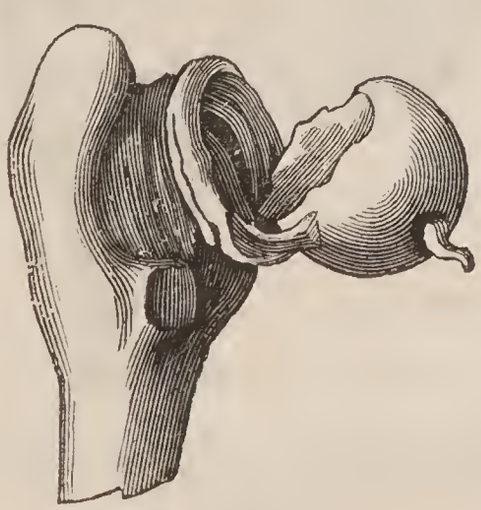
Sarah Ashton, æt. 65.—Fracture of the Neck of the femur within the capsular ligament. A false membrane in some places covers the cartilage of the head of the bone, and in others the cartilage has been absorbed; the under surface of the superior fragment is concave, smooth, dense, and polished as ivory. The greater part of the neck of the bone has been absorbed, and the fractured surface is covered partly with a fibrous

structure, and partly with a porcellaneous deposit; the fragments have been maintained in apposition by a few of the fibrous reduplications which have remained entire along the upper and under surfaces of the cervix: the joint contained a large quantity of synovial fluid. The injury was received nine years before the patient died. The foot was everted, and the limb shortened one inch and a quarter: the woman died of erysipelas of the leg which terminated in gangrene.



CASE XVI.—*Intracapsular Fracture of the Neck of the Femur.*

Elizabeth Casey, æt. 50.—Fracture of the neck of the femur within the capsular ligament. The under surface of the supe-

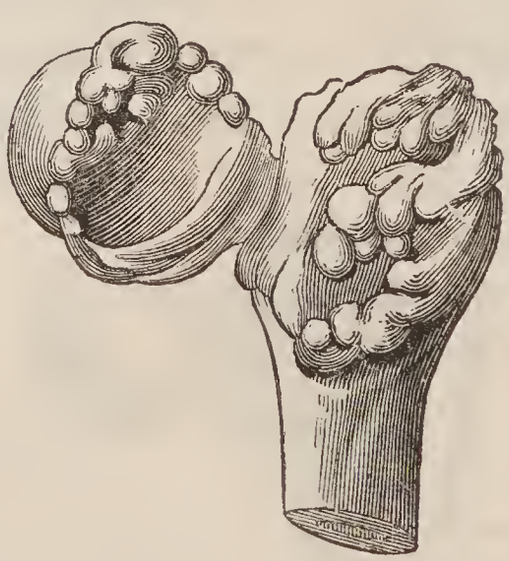


rior fragment is slightly concave, and covered with a fibro-cartilaginous structure. The fracture passes obliquely from above and behind downwards and forwards; the lower fragment has

suffered but little from absorption: the fibro-synovial folds remain entire only along the concavity of the neck of the bone; a few delicate ligamentous bands extend from the capsule to the surface of the superior fragment. The injury was received a considerable time before the patient died. The foot was inverted, and the limb shortened three-quarters of an inch.

CASE XVII.—*Intracapsular Fracture of the Neck of the Femur.*

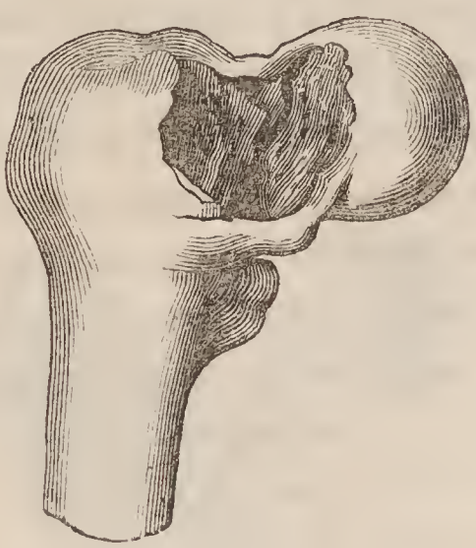
Robert Robinson, æt. 50.—Fracture of the neck of the femur within the capsular ligament. The head of the bone is in several places covered by a false membrane, and deprived of its investing cartilage; its broken surface is slightly hollowed out, and throughout the greater part of its extent covered by a dense, fibro-cartilaginous tissue which united it to the lower fragment. Where this structure did not exist, the surface presented the hardness and polish of ivory. The fracture had existed for several years before the death of the patient, and was the result of a fall upon the trochanter. At the period of his death the shortening of the limb amounted to two inches: the neck of the bone has been absorbed.



CASE XVIII.—*Intracapsular Fracture of the Neck of the Femur.*

Ellen Walker, æt. 70.—Fracture of the neck of the femur within the capsular ligament, close to the circumference of the cartilage of the head of the bone, and passing ob-

liquely from before downwards and outwards; the fibrous cylinder which invests the neck of the bone has been torn throughout the whole of its anterior aspect, but posteriorly has remained uninjured. Blood was poured out between the broken surface. The injury (the consequence of a fall upon the hip) proved fatal upon the seventh day after its occurrence, from the supervention of irritative fever: the patient suffered severely from spasms of the limb, the shortening of which amounted to half an inch.



CASE XIX.—*Intracapsular Fracture of the Neck of the Femur.*

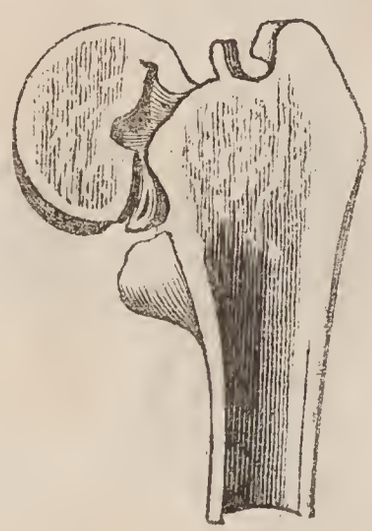
Laurence Reilly, æt. 56.—Fracture of the neck of the femur within the capsular ligament. The entire of the cervix has been absorbed, and the head of the bone removed far above the level of the cotyloid ligament; a strong band of ligament passes from the under surface of the superior fragment to the capsule of the joint; the head of the bone was connected to the acetabulum by a very vascular membrane; the lower fragment was the seat of acute osteitis; and the periosteum was also inflamed and separated from the bone, the compact tissue of which had been recently absorbed, and the rough surface of the cancellated tissue was thus exposed; this tissue was vascular in the extreme, and in some places covered with lymph, flakes of which, mixed with purulent matter, were contained in the joint, and a large collection of dark coloured, sanious, and offensive pus surrounded

the articulation. The sternum was fractured at the junction of the first with the second bone; this injury was of recent occurrence; the broken surfaces were bathed in matter of the same unhealthy quality as that already mentioned as existing in the vicinity of the hip joint; this abscess was not only visible externally, but also formed a tumour in the anterior mediastinum; the lungs had contracted a slight adhesion to the back of the sternum, from which the periosteum was separated at the seat of the abscess; the lower lobes of the lungs presented the anatomical character of pneumonia in its early stage. The patient, a miserable looking man, exhausted by poverty and distress of every description, was admitted into the hospital, December

31st, 1839; he had been knocked down by a cart loaded with hay, and it was stated that the vehicle had passed over his body. The usual symptoms of fracture of the neck were present; the foot was everted, and the limb shortened two inches; it was at the time supposed that the lesion of the bone was produced by the recent accident. The *post mortem* examination proved that it must have been of very long duration; the joint, however, was extremely painful, tense, and swollen; and he complained of difficulty of breathing, and pain in the region of the sternum, the fracture of which was evident. Severe febrile symptoms of a low typhoid character rapidly set in, and proved fatal about a week after the occurrence of the accident.

CASE XX.—*Intracapsular Fracture of the Neck of the Femur.*

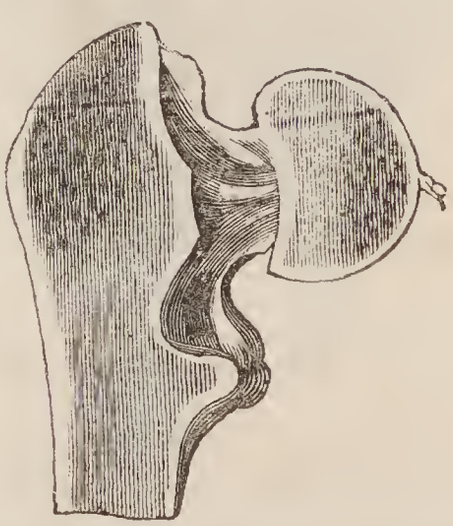
Joseph Seaton, æt. 90.—Fracture of the neck of the femur within the capsular ligament, with considerable absorption of both fragments. The fractured surfaces closely approximated are united by a dense ligamentous structure, passing from one to the other. A false membrane, which in the recent state was covered with minute arborescent vessels, invests the head of the bone, a similar membrane covered the acetabulum, but these two membranes were not adherent to each other. The bone presents a remarkable example of that peculiar atrophy or degeneration which affects the osseous system of the aged: the bony arch of compact tissue, from which principally the neck of the femur derives its strength, has been almost entirely removed, and the atrophy extends to the shaft of the femur, which is, in



many situations, so much softened, that it yields to very slight pressure; the medullary canal and cells of the cancellated tissue are enlarged and occupied by a semi-fluid matter, more resembling oil than medulla; the muscles of the hip joint were pale and atrophied, and their wasted fibres were separated from each other by an unhealthy looking, soft, fatty deposition. The fracture was caused by a fall upon the hip, seven years previously to the death of the patient; the limb was one inch and a quarter shorter than the other; for many years before his death the patient was a bedridden lunatic. Bronchitis was the immediate cause of death.

Case XXI.—*Intracapsular Fracture of the Neck of the Femur.*

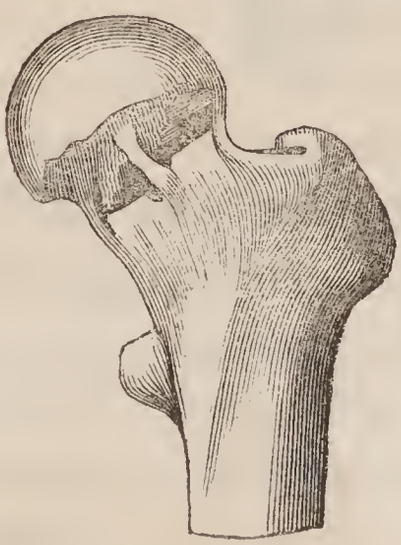
A female, æt. 65.—Fracture of the neck of the femur within the capsular ligament, with absorption of the entire of the cervix. The shaft of the femur, where in the normal state, it joins the neck of the bone, presents a smooth, flat surface, the greater part of both trochanters having disappeared; the under surface of the superior fragment was removed to the level of the acetabulum; the head of the bone (the cartilage of which was in part destroyed) and the acetabulum were smaller upon this than upon the opposite side. The patient had broken the neck of the femur several years before her death, and was confined to her bed from the time of the occurrence of the accident up to the period of her decease; the limb was shortened two inches and a half, and much reduced in size when compared with the opposite limb.



Case XXII.—*Intracapsular Fracture of the Neck of the Femur.*

Thomas Connolly, æt. 50.—Fracture of the neck of the femur within the capsular ligament close to the head of the bone. The fracture is transverse with respect to the axis of the cervix, the fibrous investments of which have been lacerated throughout nearly the whole of their anterior aspect, posteriorly they are uninjured; a large quantity of blood was effused be-

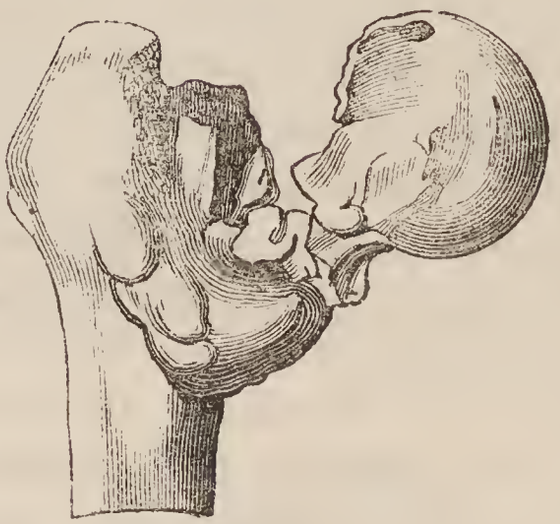
tween the fragments, beneath the integuments, and among the muscles of the thigh as low as the knee joint. The patient survived the receipt of the injury about ten days; he sunk under an attack of fever which set in immediately after the occurrence of the accident, and the prominent symptoms of which were, a dry brown tongue, a weak and rapid pulse, restlessness, insomnia, and great prostration of strength; there was complete eversion of the foot, and the shortening of the limb amounted to three quarters of an inch.



CASE XXIII.—*Intracapsular Fracture of the Neck of the Femur.*

Bridget Misset, æt. 72.—Fracture of the neck of the femur within the capsular ligament. The fracture passes obliquely from before, backwards and outwards, approaching much nearer to the posterior than to the anterior inter-trochanteric line; superiorly the fracture encroaches a little upon the investing cartilage of the head of the bone, the under surface of which is slightly hollowed out; the fibro-synovial coverings of the cervix have been almost every where torn, a small band, a few lines in breadth, at the concavity of the arch of the neck of the bone, alone prevents the complete separation of the fragments; osseous matter has been formed in the vicinity of the lesser trochanter. In this case, the eversion of the foot was very remarkable, and the limb

was shortened one inch. The patient lived ten weeks after the receipt of the injury.



Case XXIV.—*Extracapsular Fracture of the Neck of the Femur with Fracture of both Trochanters.*

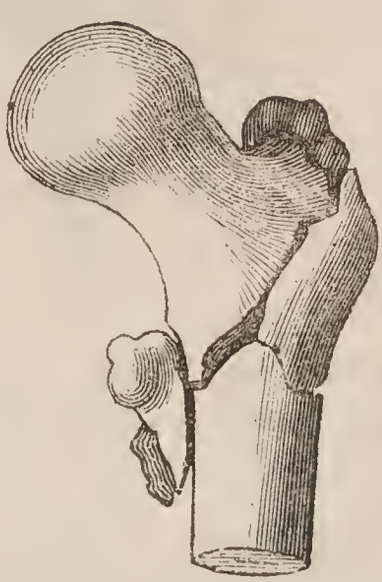
Patrick Murphy, æt. 80.—Transverse serrated fracture of the neck of the femur, external to the capsular ligament, at the line of junction of the cervix with the shaft of the bone. A second fracture has detached the trochanter major, which was

drawn upwards and downwards, carrying with it the insertions of the pyriformis, gemelli, and external obturator muscles, together with a considerable portion of the glutæus maximus. A third

fracture has separated the trochanter minor, and along with it the insertion of the psoas magnus and iliacus internus; the capsular ligament was much thicker than natural, and an extensive ecchymosis surrounded the articulation. The fracture was produced by a fall upon the hip, the limb was shortened two inches, the foot *inverted*, and the entire limb in a state of adduction; the trochanter major could be felt about the dorsum of the ilium, a little above the sciatic notch. The injury was followed by a low fever, attended with stupor and occasional raving, a dry, brown tongue, and an intermitting pulse; a dark slough at length formed over the sacrum, and the patient died upon the fourteenth day after the occurrence of the accident.

CASE XXV.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of both Trochanters.*

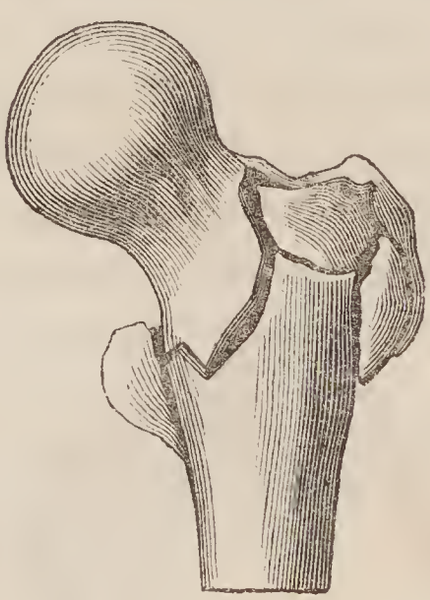
Alicia Harris, æt. 70.—Fracture of the neck of the femur, external to the capsular ligament, close to the anterior intertrochanteric line; the trochanter major and trochanter minor have both been separated from the shaft of the bone, and the former broken into two portions; the posterior surface of the femur between the two roots of the linea aspera has also been detached. Five days before her admission into the hospital,



the patient had been thrown down with considerable violence, and having with great difficulty arisen, she fell a second time; the joint was swollen, tense, and painful, and the limb shortened one inch and a half. The woman died of bronchitis upon the tenth day after the receipt of the injury.

CASE XXVI.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of both Trochanters.*

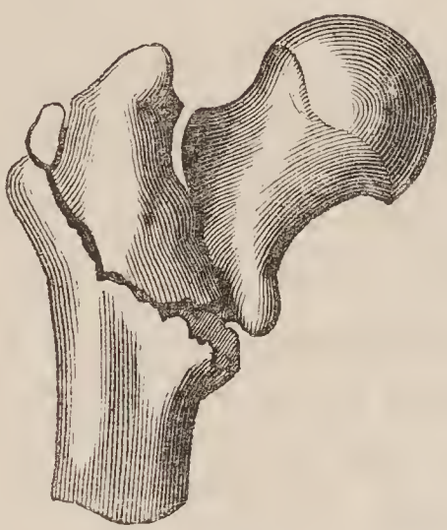
James Stanford, æt. 67.—Comminuted fracture of the neck of the femur external to the capsular ligament; in one or two places, the compact structure of the neck of the bone within the capsule has been broken; the trochanter major has been separated from the shaft, and broken into several pieces, the trochanter minor also has been detached, the fracture of the cervix passes obliquely from above and behind, downwards, forwards, and inwards, towards the upper trochanter; a large quantity of semicoagulated blood existed between the fragments and among the muscles around the joint. The foot was everted, and the limb shortened two inches. Immediately after the receipt of the injury, the patient was attacked with delirium tremens, which proved fatal upon the eighth day.



CASE XXVII. *Extracapsular Fracture of the Neck of the Femur, with Fracture of both Trochanters.*

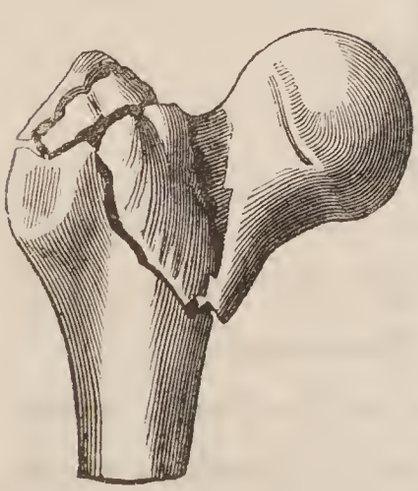
A man, æt. 50.—Fracture of the neck of the femur, external to the capsular ligament, at the line of junction of the cervix with the shaft of the bone. The fracture passes through the centre of the upper trochanter, one-half of which thus remains connected with the body of the femur; the trochanter major has been broken off, and split into two portions; a very

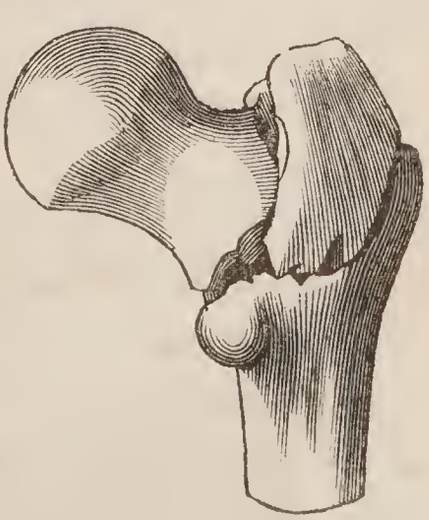
large quantity of blood was poured out between the fragments and among the muscles in the vicinity of the joint. The limb was shortened two inches, and the foot everted; the injury was the result of a violent fall upon the trochanter, and was followed by severe constitutional disturbance, which proved fatal a fortnight after the occurrence of the accident.



CASE XXVIII.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of the Trochanter Major.*

Mary Kelly, æt. 56.—Fracture of the neck of the femur, external to the capsular ligament; in front a triangular portion of bone has been separated both from the shaft and neck of the





femur, causing the fracture in this situation to extend a short distance within the capsular ligament, the trochanter major has been completely separated from the body of the bone and com-

minuted. The limb was shortened one inch and a quarter, and the foot everted. The patient survived the occurrence of the accident eleven days.

CASE XXIX.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of both Trochanters.*

Ellen Bryan, æt. 65.—Fracture traversing the neck of the femur, external to the capsular ligament, at its line of junction with the shaft of the bone; a second fracture commencing at the summit of the trochanter major, terminates at the trochanter minor, detaching the posterior half of each of these processes, together with the intervening portion of the bone, and the centre of this detached portion is traversed by a third fracture: the superior extremity of the lower fragment, in consequence of the breaking down of the cancellated tissue, was deeply excavated; the cavity thus formed was filled with blood, which was also copiously effused between the muscles, and beneath the integuments. The patient died of bronchitis five days after the receipt of the injury: *the foot was not everted;* it rather manifested a tendency to inversion. The shortening of the limb amounted to one inch and a half.

CASE XXX.—*Extracapsular Fracture of the Neck of the Femur.*

Patrick Grant, æt. 70.—Fracture of the neck of the femur external to the capsular ligament, passing from above and with-

in, with a great degree of obliquity downwards and outwards, its highest point, which corresponds to the concavity of the neck of the bone, extends within the capsule; inferiorly the fracture terminates below the summit of the trochanter major, leaving that process continuous with the superior fragment; in the recent state the bones presented evidence of having been the seat of acute inflammation; the anterior surface of the shaft immediately below the line of fracture exhibited a cribriform appearance, produced by the ulcerative absorption of the compact tissue; the periosteum was separated from the bone by purulent matter, and highly inflamed. The injury was caused by a violent fall upon the trochanter; the foot was strongly everted, and the limb shortened one inch and a half; the patient survived the occurrence of the accident only five days.

CASE XXXI.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of both Trochanters.*

Margaret Connolly, æt. 89.—Fracture of the neck of the femur external to the capsular ligament. Through the intertrochanteric lines a second fracture had separated both trochanters from the shaft of the femur, together with the whole of that portion of the bone comprised between the two roots of the linea aspera; a large quantity of blood was effused between the fragments. The patient was an exceedingly infirm old woman,

she had an oblique fracture of the tibia, and also of the radius; these, however, had occurred many years before her death, and were firmly united, but with great deformity. She survived the injury of the hip joint only twelve days; the limb was shortened one inch and a half and the foot everted.

CASE XXXII.—*Extracapsular Fracture of the Neck of the Femur, with Fracture of the Trochanter major.*

Thomas Murphy, æt. 41.—Fracture of the neck of the femur, external to the capsular ligament, with a comminuted fracture of the great trochanter; the bone has been broken into six distinct fragments, independent of the cervix; the muscles around the joint were pale and flaccid, and the cancelli of the femur were filled with an oily fluid. The injury was the result of the application of a very slight force. The opposite femur was the seat of numerous fractures; one passed transversely through the shaft, about three inches above the condyles and was united with but little deformity; a second passed through the bone obliquely a little below its centre; this was also united, but the inferior overlapped the superior fragment to the extent of four inches; a third fracture had separated both trochanters from the shaft of the femur, here the bond of union was a ligamentous tissue; there also existed an intracapsular fracture, with complete absorption of the neck of the bone. An enormous quantity of osseous matter, extremely porous

and vascular in its texture, was deposited throughout the entire extent of the femur, the muscles were wasted, and contained between their fibres a soft, pale, unhealthy adeps, and the bony tissue was infiltrated with an oily matter. The patient was bedridden for two years before his death, and suffered severely from pains in the long bones. The fracture was caused by very slight exertions, and the olecranon was broken while the patient was endeavouring to raise himself upon his elbow in bed during the latter part of his existence, he suffered great agony, and died worn out by diarrhœa.

CASE XXXIII.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

John Summers, æt. 74.—Fracture at the base of the neck of the femur, external to the capsular ligament. The cotyloid fragment is impacted into the cellular structure of the upper extremity of the shaft; between the trochanters a dense fibrous structure, interposed between the broken surfaces, formed a bond of union; a second fracture passing downwards and inwards, towards the lesser trochanter, has separated from the shaft the greater trochanter, together with that portion of the femur comprised between the two roots of the linea aspera: this fracture has been re-united by a ligamentous tissue. The patient died of sloughing of the nates, two months after the receipt of the injury, which was caused by his having fallen out of bed. The

shortening of the limb amounted to an inch and a half, and the foot was everted; but the most accurate examination failed to detect crepitus.

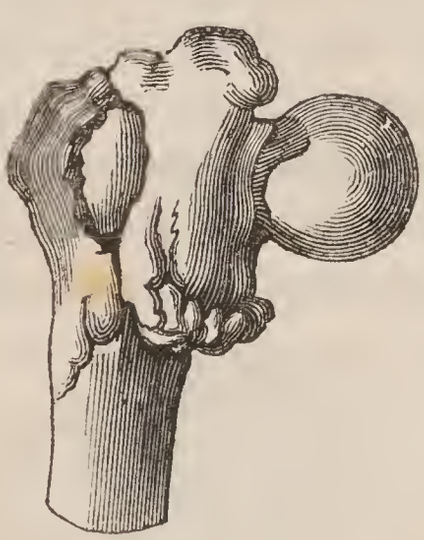
CASE XXXIV.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

Mary M'Kenna, æt. 52.—Fracture of the neck of the femur external to the capsular ligament. The superior fragment has been driven down into the cancelli of the shaft, and become firmly impacted between the trochanters. A crack or fissure passes through the trochanter minor, at right angles with the shaft of the femur, and a similar fissure traverses the posterior part of the trochanter major; these two fissures are, however, not continuous with each other: the descending ramus of the pubis was broken obliquely, the fracture passing downwards and inwards from the thyroid foramen. The patient died upon

the fourth day after the occurrence of the accident. The injured limb was shortened three-quarters of an inch, the foot everted, and the slightest motion painful.

Case XXXV.—*Impacted Fracture of the Neck of the Femur, external to the Capsule.*

Catherine Egan, æt. 60.—Fracture traversing the base of the neck of the femur, external to the capsular ligament, with impaction of the broken cervix into the cancellated tissue of the shaft of the bone: a second fracture traverses the posterior intertrochanteric space, separating the lesser trochanter and posterior half of the greater from the shaft, between which and the fragment then detached, the broken extremity of the cervix appears; in the recent state it was in naked contact with the bursa, situated under the tendon of the glutæus maximus: the neck and shaft of the femur form a right angle with each other. The patient died of diarrhœa one month after the receipt of the injury. The limb was shortened one inch and a quarter, and the foot was inclined inwards; it was capable of being everted, but the tendency to inversion was strongly marked.



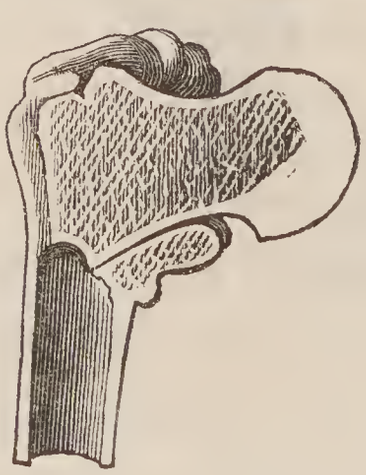
Case XXXVI.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

Sally Denny, æt. 70.—Fracture of the neck of the femur external to the capsular ligament; the cervix has been driven nearly at a right angle into the cancellated tissue of the shaft, with the outer wall of which it is in contact. A second fracture passing through the inferior boundary of the posterior

intertrochanteric space, has separated from the shaft both trochanters, together with the intervening portion of the bone: an irregular and exuberant osseous growth marks the line of fracture, and surrounds the broken cervix. The patient survived the injury one month. The foot was everted; the limb was shortened one inch, and extension failed to restore it to its natural length; neither could the most accurate examination detect crepitus.

Case XXXVII.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

Alicia Sherlock, æt. 64.—Fracture of the neck of the femur external to the capsular ligament; the broken cervix has sunk into the cancellated tissue of the shaft at a right angle, and its extremity is in contact with the outer wall of the femur:



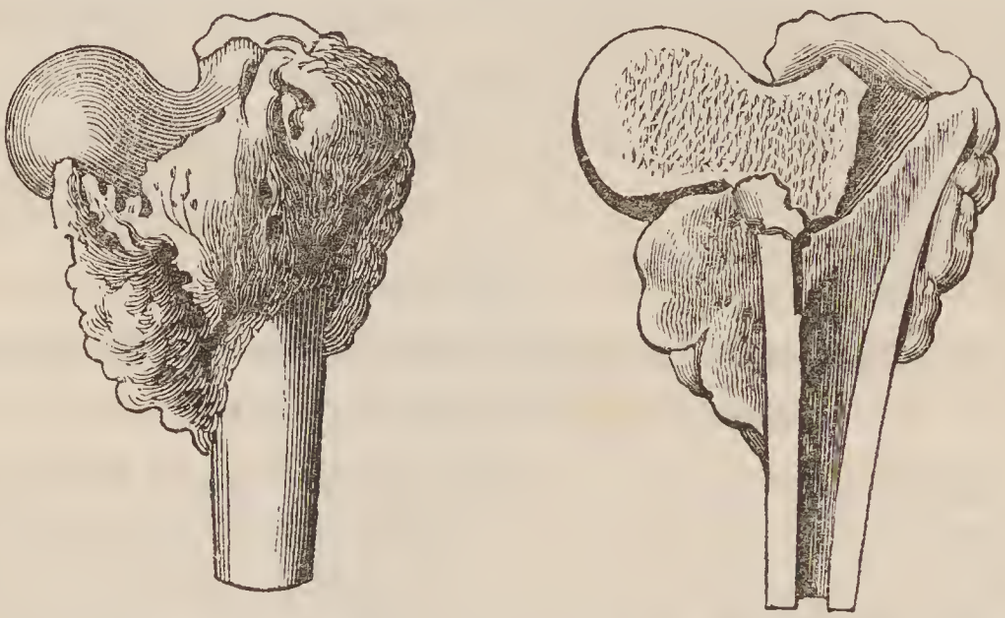
a second fracture passing through the posterior intertrochanteric space has separated both trochanters from the shaft of the femur, the concavity of the cervix is in contact with, and sup-

ported by, the lesser trochanter. There is no motion whatever between the broken cervix and the shaft of the femur; and at the central part of the neck of the bone, the line of fracture is scarcely visible: the fracture through the trochanters is firmly united. The patient lived three months and a half after the receipt of the injury. There was but little alteration in the position of the foot, but the tendency was to eversion; the shortening amounted to half an inch, and the most accurate examination failed to detect crepitus.

Case XXXVIII.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

James Power, æt. 54.—Fracture of the neck of the femur external to the capsule, with impaction of the cotyloid fragment into the cancellated tissue of the trochanter major and superior extremity of the shaft: this tissue, where it is opposed to the broken surface of the superior fragment, is converted into a dense, compact structure; the neck of the femur is united to the condensed tissue by short ligamentous bands, but the two portions of the fractured bone are still capable of being moved upon each other: the cervix forms rather less than a right angle with the shaft of the femur; and the anterior inferior angle of its broken extremity projects nearly half an inch in front of the shaft, in such a manner, that the axis of the neck is directed backwards instead of forwards: a second fracture passing downwards and inwards through the posterior inter-trochanteric space, has separated both trochanters from the shaft of the bone; this fracture has been united by bone; a most exuberant growth of which, very irregular in form, and spongy and porous in texture, has sprung from the inter-trochanteric lines, and encircled the neck of the femur. The injury was the result of a fall upon the trochanter, and was received January 3, 1839; the patient was admitted into the hospital immediately after the occurrence of the accident: the usual signs of fracture of the neck of the femur were present, and the limb was shortened an inch and a

half. After the expiration of seven weeks, the patient left the hospital, and was able to walk with the assistance of crutches; he had at this time disease of the bladder, for which he was re-admitted, June 3, and of which he died June 11.



CASE XXXIX.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

A. B., æt. 70.—Fracture of the neck of the femur external to the capsular ligament, with impaction of the superior fragment into the cancellated tissue of the inferior. A second line of fracture passes through the posterior inter-trochanteric space, and terminates close to the lesser trochanter. The cervix forms an acute angle with the shaft of the femur; both fractures have

been perfectly united by bone. The cancellated tissue, the cells of which are enlarged, was filled with an oleaginous medulla, and the head of the bone could be crushed by a very slight force: the compact structure of the arch of the neck of the femur is atrophied, and the bone is remarkable for its extreme

lightness. The injury was received long before the death of the patient, who was bedridden during the whole of the intervening time. I have not been able to ascertain how far the limb was shortened in this case.

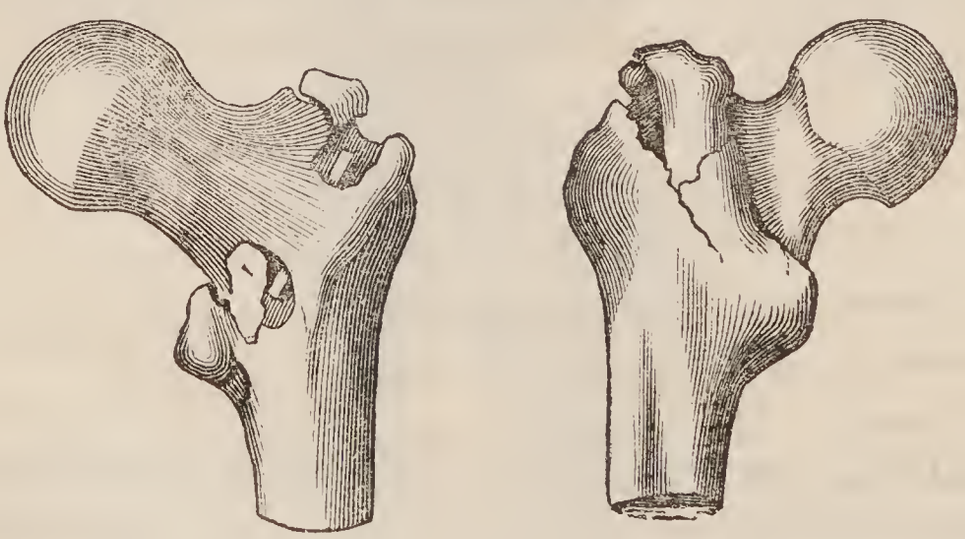
Case XL.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

Fracture of the neck of the femur external to the capsular ligament, with impaction of the superior fragment into the cancellated tissue between the trochanters: the angle which the neck of the bone forms with the shaft in the normal state, has been in this instance nearly preserved; but the direction of its axis is slightly altered; it forms with the shaft an angle salient in front, as in the case of Dunn; there is a mutual interlocking of the fragments; the centre of the broken surface of the femoral fragment forming a remarkable convexity, which is received into a corresponding concavity in the cotyloid fragment. Union has not taken place along this line of fracture; the greater part of the trochanter major has been separated from

the shaft by a second fracture, which passes downwards and inwards through the posterior inter-trochanteric space; here a solid bony union has however occurred; the neck of the femur, although perfectly moveable, cannot be extricated from the cavity between the trochanters, into which it has been received, so complete is the interlocking of the fragments. I know nothing of the history connected with this preparation.

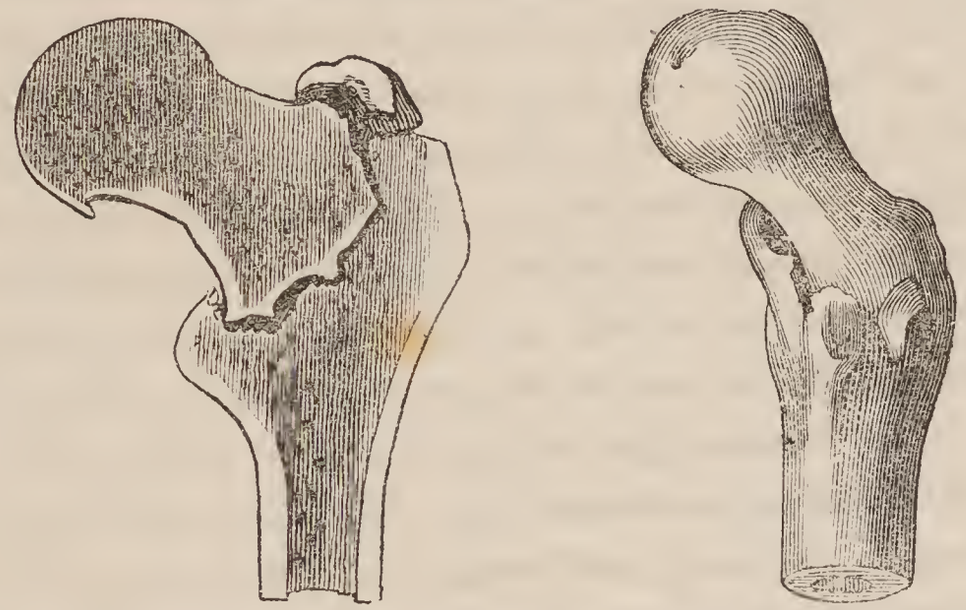
Case XLI.—*Impacted Fracture of the Neck of the Femur external to the Capsule.*

Bryan Dunn, æt. 60.—Fracture of the neck of the femur at its junction with the shaft of the bone. The line of fracture passes through the anterior intertrochanteric line, so as to be external to the cavity of the joint, but at the same time concealed by the insertion of the capsular ligament; at the upper and lower extremities of the line of fracture the capsular ligament has been lacerated by the superior fragment, but the middle third of its insertion into the inter-trochanteric line has remained perfect, and being connected to the edge of both fragments has prevented any considerable amount of displacement from occurring. A second fracture passes from the anterior part of the summit of the great trochanter downwards and inwards, towards the lesser trochanter, degenerating into a hair-like fissure as it approaches that process; a third fracture, running downwards and outwards meets the line of the second nearly at a right angle, and thus completes the separation of that portion of the great trochanter which gives insertion to the glutæus medius and quadratus femoris; another crack or fissure passes downwards at right angles with the lesser trochanter, but is not continuous with the



fissure already mentioned. The neck of the femur has lost in a slight degree its natural obliquity with respect to the shaft, and its axis, instead of being directed upwards and forwards as in the normal state, is directed upwards and backwards; it thus forms with the shaft an angle salient in front: the section of

the head and neck of the bone shews that the superior fragment has been driven into the cancellated tissue of the inferior, but (owing to the obliquity of the cervix, its axis being directed backwards and its lower extremity thrown forwards) the posterior half alone of the broken surface of the upper fragment



has been impacted. A sharp point of bone projecting from the anterior margin of the superior fragment, where the attachment of the capsular ligament was destroyed had penetrated one of the branches of the external circumflex artery, and the blood poured forth from the lacerated vessel separated the muscles from each other as low as the knee joint. In this case the shortening of the limb amounted to half an inch, the patient died thirteen days after the receipt of the injury.

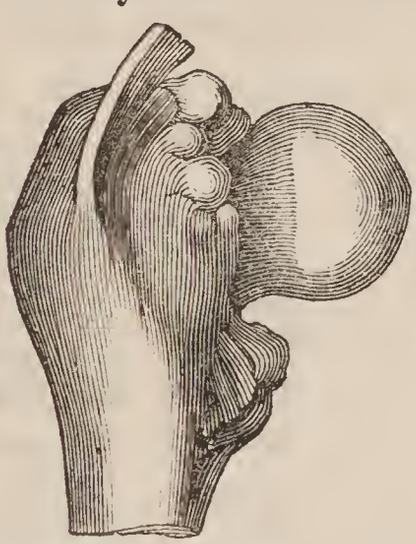
Case XLII.—*Impacted Fracture of the Neck of the Femur, internal to the Capsule, united by Bone.*

Owen Curran, æt. 70.—The following account of the history of this interesting and important specimen is taken from the article published by Mr. Adams in Todd's Cyclopædia, entitled, "Abnormal Condition of the Hip Joint," by far the most elaborate treatise upon the diseases and injuries of the ilio-femoral articulation, that has appeared for many years. "Owen Curran, æt. 70, was for the last five years an inmate of the pauper department of the House of Industry, he was very infirm on his limbs, and his mind was in a state of dotage; on the first of August, 1837, while walking across his ward, he fell on his

right side, he was unable to rise, and complained of pain in his right hip; he was carried to bed, and was immediately visited by the late Mr. William Johnston, who was then acting for me as clinical pupil, who found the limb everted, and only half an inch shorter than the other. Mr. Johnston considered the case a fracture of the cervix femoris, which required no other surgical treatment than that of placing and preserving the limb in a semiflexed position over pillows. The old man suffered but little pain in the injured part; at all events he did not complain of it. In about five weeks after the accident he was raised out of his bed, and when placed standing, he was able to put the heel of the injured limb to the gound. On the 30th September, that is, about eight weeks after the accident, my friend Mr. Smith entered in his note book the following memorandum of this case: 'As the patient lies in bed he can elevate the injured limb by the unassisted efforts of its own muscles. The eversion is slight, and the degree of shortening amounts to one inch; no force can bring the limb down to the length of the other. From the history and symptoms this seems to have been a case of impacted fracture.' This man survived the accident one year and nearly ten months, during which period, he was contented to remain most of the time in his bed, but when placed on his feet could stand very well, and was able, but unwilling to walk. On Tuesday, the 20th of May, he got an attack of bronchitis, which the following Friday terminated fatally.

At twelve o'clock on Saturday, the 25th of May, assisted by Mr. Brabazon and some of the pupils of the Hospital, I made an examination of the body. The right leg and thigh were much everted. The trochanter major was elevated, and projected much outwards; the degree of shortening just amounted to one inch; the muscles presented a healthy appearance; the capsular ligament was of a yellow colour, and somewhat thickened. The femur was removed from the acetabulum; this latter cavity presented a healthy appearance, except towards the margin of it; here the cartilage was softened. The round ligament was sound.

"The head and neck of the bone had lost their normal obliquity, and were directed nearly horizontally inwards; the cervix presented both anteriorly and posteriorly evidence of a transverse intracapsular fracture having occurred; the globular-shaped head was closely approximated behind and below to the posterior inter-trochanteric line, and to the lesser trochanter, so that the neck seemed altogether lost, except anteriorly, where a very well marked ridge of bone showed the seat of the displacement, and of the union of the fragments. This ridge was constituted by the upper extremity of the lower fragment of the cervix. The fracture of the neck posteriorly was found to have been closer to the corona of the head than anteriorly, and the fibro-synovial fold in the former situation remained unbroken. A section has been made of the bone through the head, neck, and trochanter; one portion has been subjected to maceration aud to boiling, and the bony union has been unaffected by these tests: scarcely



any portion of the neck can be said to have been left. The section shows the compact line which denotes the union of the fragments; the head and shaft seem to be mutually impacted into each other, and almost the whole of the cervix has been absorbed. The line of union is serrated, solid, and immoveable; and the cells of the head and substance of the shaft seem to communicate freely in all places, except where the thin line of compact tissue here and there points out the seat of the welding together of the remaining portions of the head and neck of the femur. The bone was, in its recent state, on the 25th May, laid before a meeting of the Pathological Society. It seemed

to be the universal opinion of the members present that it was a decided specimen of the intracapsular fracture of the cervix femoris, which had been solidly united by bony callus."

I have now given as concise an account as was consistent with accuracy, of the preparations contained in the Museum of the Richmond Hospital; and for the sake of more convenient reference subjoin the following Table, showing the age of the patient, the degree of shortening of the limb, and the position of the foot, in the cases which I have detailed; and also the length of time which elapsed between the receipt of the injury and the death of the patient.

Intracapsular Fractures of the Neck of the Femur.

No.	Name.	Age.	Shortening.	Position of the Foot.	Period of Survival after the Receipt of the Injury.
1	Laurence Maguire,	40	½ inch,	Eversion,	14 days.
2	William Collins,	36	¾ ,,	Do.	17 ,,
3	Thomas Maguire,	84	½ ,,	Do.	14 ,,
4	Dorah Campbell,	75	1 ,,	Do.	2 months.
5	Mary Gill,	80	½ ,,	Do.	Not known.
6	Esther Christie,	60	1½ ,,	Do.	Not known.
7	Mary Lamb,	80	¾ ,,	Do.	1 year.
8	Margaret Bourke,	90	½ ,,	Do.	14 days.
9	Margaret Myler,	78	¼ ,,	Do.	2 months.
10	A Female,	65	1 ,,	Do.	Not known.
11	Patrick Doolan,	60	2 ,,	Do.	7 years.
12	Michael Curry,	40	1¼ ,,	Do,	1 month.
13	Matthew Reilly,	46	½ ,,	Do.	4 months.
14	A Female,	55	1 ,,	Do.	Not known.
15	Sarah Ashton,	65	1¼ ,,	Do.	9 years.
16	Elizabeth Casey,	50	¾ ,,	Inversion,	Not known.
17	Robert Robinson,	50	2 ,,	Eversion,	Several years.
18	Ellen Walker,	70	½ ,,	Do.	7 days.
19	Laurence Reilly,	56	2 ,,	Do.	Several years.
20	Joseph Seaton,	90	1¼ ,,	Do.	7 years.
21	A Female,	65	2½ ,,	Do.	Several years.
22	Thomas Connolly,	50	¾ ,,	Do.	10 days.
23	Bridget Misset,	72	1 ,,	Do.	10 weeks.

Extracapsular Fracture of the Neck of the Femur.

24	Patrick Murphy,	80	2 ,,	Inversion,	14 days.
25	Alicia Harris,	70	1½ ,,	Eversion,	5 ,,

No.	Name.	Age.	Shortening.	Position of Foot.	Period of Survival after the Receipt of Injury.
26	James Stanford,	67	2 inches,	Eversion,	8 days.
27	A. B. a man,	50	2 ,,	Do.	14 ,,
28	Mary Kelly,	56	1¼ ,,	Do.	11 ,,
29	Ellen Bryan,	65	1¼ ,,	Do.	5 weeks.
30	Patrick Grant,	70	1½ ,,	Do.	5 days.
31	Margaret Connolly,	89	1½ ,,	Do.	12 ,,
32	Thomas Murphy,	41	Not known	Do.	A few weeks.
	Impacted Fractures of the Neck of the Femur, external to the Capsule.				
33	John Summers,	74	1½ ,,	Eversion,	2 months.
34	Mary M'Kenna,	52	¾ ,,	Do.	4 days.
35	Catherine Egan,	60	1¼ ,,	Inversion,	1 month.
36	Sarah Denny,	70	1 ,,	Eversion,	1 ,,
37	Alicia Sherlock,	64	½ ,,	Do.	15 weeks.
38	James Power,	54	1½ ,,	Do.	5 months.
39	A. B. a female,	80	Not known	Do.	Not known.
40	Not known,	..	..	..	.. ..
41	Bryan Dunn,	60	¼ ,,	Do	13 days.
	Impacted Fracture of the Neck of the Femur, internal to the Capsule.				
42	Owen Curran,	70	½ ,,	Eversion.	1 year & 10 mo.

INTRACAPSULAR FRACTURE OF THE NECK OF THE FEMUR.

Although in recent cases of fracture of the neck of the femur within the capsular ligament, the phenomena which present themselves are neither as varied nor as striking as those which are observed when the fracture has happened several years before the death of the patient, yet still in the former there are certain features deserving of notice. The most important of these has reference to the condition of the longitudinal folds of fibro-synovial membrane, which invest the neck of the bone; they have been termed "retinacula" by Weitbrecht, and constitute, in the normal state, a cylindrical sheath of considerable strength; and when in cases of intracapsular fractures, they escape without injury, or are but slightly lacerated, they not

only modify the symptoms by maintaining the broken surfaces in apposition, and preventing the retraction of the limb, but likewise become the sole medium through which a vascular communication is preserved between the superior and inferior fragments; the importance, therefore, is evident, of respecting them in all the examinations to which we submit the broken limb; *and if the existence of a fracture of the neck of the femur is rendered manifest by the presence of the other symptoms which characterize this lesion,* would it not, in such cases, be more prudent to abstain from instituting the painful examination necessary to ascertain the existence of crepitus; and although the promulgation of such a doctrine as this has drawn from Sir Astley Cooper the exclamation, "is this written by an English surgeon in the land of John Hunter?" I am not the less firmly impressed with the belief, that much injury is frequently done by too great a desire upon the part of the surgeon to ascertain the existence of crepitus. The examination necessary for this purpose should, of course, be made *in doubtful cases;* but in the majority of instances of fracture of the neck of the femur within the capsule, the existence of the lesion of the bone is sufficiently evident from other symptoms. Upon a former occasion I alluded to this subject, and mentioned several cases of fracture of the neck of the femur, in which the limb having preserved its natural length for some weeks, then became suddenly shortened, and supposed that in these instances, the retinacula having, at the time of the occurrence of the accident, escaped injury, prevented the retraction of the limb, but that subsequently they were torn, either in consequence of some imprudent exertion on the part of the patient, or too eager a desire on that of the surgeon to ascertain crepitus by powerful extension and rotation of the limb; the retraction then takes place as the immediate consequence of their laceration.* The same subject has been alluded to by Cruveilhier: this justly eminent

* Dublin Journal, vol. iv. 1834.

pathologist remarks; " on conçoit combien il est peu rationel de vouloir, a tout prix par des mouvemens de rotation imprimés aux membres, obtenir le bruit de crepitation, comme moyen de diagnostic; il n'est pas besoin de dire que ces mouvemens peuvent avoir le grave inconvenient de completer la rupture du repli fibro-synovial, respecte en quelque sorte par la cause fracturante; que ce repli fibro-synovial est d'autant plus important a conserver qu'il serait le seul element de la formation du cal si ce cal etait possible; que ce repli fibro-synovial acquiert une grand densite et devient souvent le seul moyen d'union des fragmens."† This important investment of the neck of the femur, remains in some cases uninjured throughout almost its whole circumference, as in Case I.; in some it is every where destroyed, as in Case XII.; while in others it is lacerated only throughout half its circumference; and it is remarkable that in the great majority of such cases, it is the portion which invests the front of the neck of the bone which is destroyed; the explanation of this will, I think, be found in the circumstance, that the rotation outwards of the femur, consequent upon the fracture of its cervix, by approximating the base of the neck to the brim of the acetabulum, relaxes the posterior, while it stretches the anterior half of this fibro-synovial cylinder. Mr. Stanley mentions the case of a man, æt. 60, who was knocked down in the street, and was admitted soon after the injury into St. Bartholomew's Hospital, complaining of pain in the hip, but there was neither shortening nor eversion of the limb, nor any of the usual indications of fracture of the neck of the femur: he died of inflammation of the intestines about five weeks from the date of the accident. *Post mortem* examination detected an intracapsular fracture at the basis of the neck of the femur; but the broken surfaces were in contact, and the synovial and fibrous membranes covering the neck of the bone were uninjured. Mr. Stanley justly observes, that if, in this case, an attempt had been made to walk at the end of

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* Livraison, xxvi. 1836.

two or three weeks from the date of the injury, a separation of the fractured surfaces, and consequent shortening of the limb, would have been the result. The anatomical characters of the intracapsular fractures of the neck of the femur, in cases in which the injury has occurred long before the death of the patient, are no less remarkable than they are varied. The capsular ligament is usually greatly increased in thickness, and often acquires a semicartilaginous firmness, and even osseous matter is occasionally deposited in it;* it is but seldom lacerated, though I have seen one instance in which it was extensively torn; and Mr. Colles mentions a case in which a sharp projecting splinter belonging to the upper fragment pierced the front of the capsule and the bursa, which is here placed connected with the psoas muscle, the tendon of which appeared as if unravelled, in its texture, or split into a number of softened tendinous threads. The synovial membrane also is in general thicker than in the normal state, and lymph is frequently deposited upon its surface, not only where it lines the interior of the capsule, but also where it is reflected upon the neck of the femur. In some cases these depositions constitute the material of organized adhesions between the opposed synovial structures; these adhesions are often of great strength, and frequently pass from the synovial lining of the capsule to the broken surface of the upper fragment, though in many cases both fragments are thus connected to the capsular ligament. The synovial membrane sometimes presents the anatomical characters of acute inflammation, but this is by no means usual, the lymph which we find effused being generally the product of chronic rather than acute synovitis; nevertheless it occasionally happens, that not only the fibrous and synovial structures, which enter into the composition of the joint, become the seat of active inflammation, but even acute osteitis is set up, and the capsule rapidly becomes distended in such cases with lymph and purulent matter, (Case XII.) These

* Colles; Langstaff.

generally fatal consequences are most likely to ensue when the injury happens to those whose constitution is at the time favourable to the production of diffuse inflammation. In general the head of the femur preserves its globular form, and is moveable in its socket, but sometimes it becomes adherent to the acetabulum, (Case XI.) and the opposed cartilaginous surfaces are found every where invested with a false membrane which constitutes the bond of union, and beneath which the cartilage is found differing but little from its normal appearance; or else the layer of cartilage being removed, the osseous surfaces of the head of the femur and of the acetabulum become closely joined to each other by a dense fibrous structure, and a false anchylosis is established; in some rare cases an organized membrane covers the acetabulum and head of the femur, and yet no union takes place between the two opposed vascular surfaces. (Case XX.) I have never known the ligamentum teres to be removed, except in cases where anchylosis is established: it sometimes, however, appears loose and unravelled in its texture, and resembles a cellular more than a ligamentous structure. The cartilage of the head of the femur is frequently in old cases removed in part, and the exposed osseous structure becomes dense, smooth, and polished; the superior fragment of the broken cervix is usually removed either by the action of the absorbent vessels, or by friction, to the level of the brim of the acetabulum; the absorption, however, sometimes extends much further, and I have seen half of the globular head of the bone thus removed, (Case XIX.;) and Banco has reported a case, in which the head of the bone was completely absorbed; in some cases its lower surface becomes uniformly concave, and forms a shallow socket, into which the upper end of the lower fragment is received; or again, it may present both a concavity and a convexity, which are adapted to a corresponding eminence and depression upon the surface of the lower fragment, and the relative position of which depends upon the original direction of the fracture. In a few rare examples, the lower surface of the cotyloid fragment

forms an uniform convexity, which is received into a socket hollowed out in the expanded surface of the lower fragment. The case of Doolan presents a very remarkable example of this condition of the broken bone, and the head of the femur having become intimately joined to the bottom of the acetabulum, a new ball and socket joint was thus formed to supply the place of the ilio-femoral articulation; a similar case is mentioned by Colles.*

When we examine the condition of the femoral fragment in old cases of intra-capsular fractures, we generally find, that it has been in a greater or less degree absorbed; sometimes, as in Case XXI., it disappears entirely to its base, and the surface of the shaft from which it springs presents a smooth and plain surface, limited by the trochanters and their connecting lines; in some cases, however, this surface becomes widely expanded and slightly concave, and presents a smooth, polished, and ivory-like appearance, and the two fragments move freely upon each other, but in numerous instances they are united by a ligamentous, fibrous, or fibro-cartilaginous structure, the result of the deposition of lymph upon the fractured surfaces; this fibrous tissue is sometimes formed over the entire surface of each fragment, as in Case XVII., maintaining them in apposition, and preventing the free motion of the one upon the other; but very frequently we find, that the material of this ligamentous union has been deposited only at one or two points; in such cases the lower fragment enjoys a considerable extent of motion, and the uniting medium becomes elongated into bands, an inch or more in length; occasionally the lower fragment suffers but little from absorption, (although the fracture may have occurred years before the patient's death,) its extremity being merely rounded, and presenting a smooth and polished surface, more or less convex. I have frequently seen a thin layer of the compact structure projecting beyond the margin of one of the fragments, and laid down upon the fractured surface.

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* Dublin Hospital Reports, vol. ii.

Mr. Colles has alluded to this circumstance in detailing the particulars of his fourth case; he mentions, that "all the fractured surface of the upper piece remained, except about one-third of it posteriorly. Here this surface was covered by the solid plate of bone which invests the neck of the femur, which was now softened, folded in, and laid down on the fractured surface of the head, so that it seemed as if in the moment of the fracture this coating had been torn from the neck of the bone, and remaining connected with the head, had projected beyond its fractured surface, but was subsequently laid down upon, and united with it." The absorption of the lower fragment is sometimes accomplished with wonderful rapidity; in the case of Margaret Myler, Case IX., the shortening of the limb which immediately followed the injury, was only a quarter of an inch, but at the expiration of six weeks, amounted to an inch and a half; and in the case of Curry, Case XII., the removal of the greater part of the neck of the bone was effected in less than a month. According as the absorption of the broken cervix proceeds, the shortening of the limb increases, the trochanters are gradually approximated to the edge of the acetabulum, and when the patient stands or walks, afford to the pelvis a certain degree of support, which in some cases is rendered more efficient by the growth of bony vegetations from the trochanters and circumference of the lower fragment; these osseous growths are, however, much more frequently seen, and are more exuberant in cases of fractures of the neck of the femur external to the capsular ligament.

We usually find, that the broken surface, and all the structures which compose the false articulation, are lubricated by an oily, viscous, synovial fluid, in which flocculi of lymph are often seen either free or attached by one extremity to the synovial lining of the capsule, or of the neck of the bone; in recent cases, the synovial fluid does not present this viscous character, and is generally tinged with blood.

Sometimes we meet with what are usually termed foreign

bodies, either free in the interior of the joint, or attached; it would appear, that in some cases they are merely portions of bone broken off from the cervix, while in others they are to be considered as new productions, and in all respects analogous to the foreign bodies so frequently found in the articulations, in cases of chronic rheumatic arthritis.

It is not my intention to enter upon the subject of the union of fractures of the neck of the femur; the long disputed question,—does osseous union of the intra-capsular fracture ever occur?—has certainly been satisfactorily replied to in the affirmative; and there is now abundant evidence to prove, not only that it is possible, but that it has actually occurred. The cases published by Langstaff, Brulatour, Stanley, Cooper, and Adams, constitute this evidence: with respect to fractures of the neck of the femur which have their seat external to the capsular ligament, I am not aware that the possibility of their being united by bone has ever been doubted, except by Professor Porter; this eminent surgeon, in the tenth volume of the Dublin Journal, has expressed his opinion, that "there is no *evidence* as yet to demonstrate, by dissection, a perfect bony union in a subject of any age, or where the fracture has occupied any situation either within or without the capsule."

EXTRACAPSULAR FRACTURE OF THE NECK OF THE FEMUR.

There are two varieties of this fracture, one of which occurs immediately below the insertion of the capsular ligament; the other, (which is much less frequently met with,) although situated external to the synovial sac, is yet embraced by the anterior attachment of the capsule, and where, in such cases, this ligament remains entire, there is no considerable displacement of the fragments, and the degree of shortening is slight in proportion. (Case of Dunn, XLI.) The line of fracture, when the bone is broken external to the capsule, is usually transverse with respect to the direction of the axis of the neck, and in these cases, the centre of the broken surface of the superior fragment generally presents a convexity, which is received into a con-

cavity formed by the crushing of the cancellated tissue between the trochanters, one or both of which processes are broken in the majority of cases. Cruveilhier truly observes: "Il est excessivement rare de voir une fracture extracapsulaire du col du femur parfaitement simple: l'atrophie senile portant en effet sur le grand trochanter que sur le col du femur, et d'une autre part, la cavité digitale detachant en quelque sorte les deux tiers posterieurs du grand trochanter du corps de l'os, cette eminence se brise, presque toujour en même temps que la base du col, et la lieu de la brisure est généralement le point de reunion des deux tiers posterieurs avec le tiers anterieurs."* My own experience fully corroborates the preceding remarks, for I do not recollect to have seen a case of an extracapsular fracture of the neck of the femur, impacted or otherwise, which was not accompanied by some other lesion of the bone. There is no example of an extracapsular fracture, "parfaitement simple," either in the museum of the Richmond Hospital, or in that of the Richmond School of Medicine; in all the specimens contained in these museums the fracture of the cervix is complicated with a fracture, either simple, comminuted, of one, or of both trochanters. In my opinion, the explanation is to be found in the circumstance, that extracapsular fractures are generally in the first instance also impacted; and in another part of this essay I have endeavoured to show, that the impacted fracture of the neck of the femur is almost necessarily accompanied by a fracture through the trochanters; it will then depend altogether upon the violence with which the injury has been inflicted, whether the neck of the bone shall remain impacted between the trochanters, or whether these processes shall be so completely separated from the shaft of the bone, as to allow of the escape of the cervix, from the cavity which it had formed for itself in the cancellated tissue of the inferior fragment: if the force has not been very great, the neck of the femur remains wedged in between the trochanters; and one or both of

* Livraison xxiii.

these processes are split or completely broken from the shaft, but not being displaced (for reasons elsewhere mentioned) the impacted cervix does not become loosened; but if the force has been considerable, the impulse prolonged, the bone in a state of senile atrophy, or if, as frequently happens, the patient, in endeavouring to rise, falls a second time; then, under these circumstances, the trochanters are not only broken from the shaft of the femur, but are so far displaced and separated from their connexion with the soft parts, that the cavity or socket, as it were, into which the superior fragment has been received, is destroyed, and the impacted cervix is thus set free, and no longer opposes the ascent of the inferior fragment.

In some cases the fracture passes downwards and outwards so obliquely, that the great trochanter, remaining connected with the cervix, forms a portion of the superior fragment, as in Case XXX.; in other instances the obliquity is in the reverse direction, the fracture passing downwards and inwards, and Vidal mentions his having seen a case, in which the obliquity in this direction was such, that the lesser trochanter formed a portion of the superior fragment, and being drawn forwards by the psoas and iliacus muscles, formed a projection in the groin. It is to be remarked, however, that the separation of the trochanter minor from the shaft of the femur, exerts very little influence upon the position of the foot, for we find that even when both trochanters are broken off, the foot, in the great majority of cases, is everted; we must, therefore, with Dupuytren, ascribe the rotation of the limb outwards in such cases, to the action of the adductor muscles, favoured by the direction of the fracture of the neck of the bone.

The extra-capsular fracture is frequently accompanied by extensive ecchymosis, and upon post-mortem examination we occasionally find, that the effused blood has separated from each other the muscles of the thigh, even as low as the articulation of the knee, as in the case of Dunn, XLI.; the broken osseous surfaces also bleed freely; and in recent cases we find clots of

blood occupying the space or cavity circumscribed by the fragments of the shattered bone: the hæmorrhage from the cancellated tissue is sometimes very profuse, causing great tumefaction of the thigh, accompanied with excessive pain; and Cruveilhier has recorded an instance of extracapsular fracture of the neck of the femur, in which the patient sunk upon the fifth day after the receipt of the injury, apparently in consequence of the profuse hæmorrhage which took place from the lacerated vessels of the broken cancellated tissue.

IMPACTED FRACTURE OF THE NECK OF THE FEMUR.

That peculiar and remarkable form of fracture of the neck of the femur termed the impacted fracture, is characterized by symptoms different from those which accompany any other variety of this lesion, and with which it behoves the practical surgeon to be well acquainted. In many cases, these symptoms are so obscure, and so much at variance with those with which we are familiar as denoting the existence of the more ordinary forms of fracture of the neck of the thigh bone, that it requires extreme caution to escape an error in diagnosis, and to avoid pronouncing, that the injury which the joint has suffered, is a severe contusion merely, which will not be followed by any lasting impairment of the function of the limb, whereas the truth is, that shortening of the limb, and lameness, are the inevitable and permanent results of even the slightest case of impaction of the broken cervix into the shaft of the femur. With respect to the anatomical disposition of the parts in this variety of fracture, we find that in cases where the neck of the bone is broken transversely, with respect to the direction of its axis, the superior fragment is simply implanted or wedged into the cancellated tissue of the inferior, without any interlocking of the broken surfaces; but occasionally we meet with cases, where the irregularity of the line of fracture is such, that the fragments become interlocked, or dovetailed as it were into each other, as in Cases XL. and XLII.; and I rather incline to the opinion, that the

former mode of impaction is more liable to occur in cases of extracapsular fracture, while the latter is more frequently seen when the injury has its seat within the capsule. I have not yet, however, collected sufficient evidence to enable me to speak with any degree of certainty upon this point, for the result of my own experience would lead me to say, that fracture of the neck of the femur within the capsule, with impaction of the cotyloid into the femoral fragment, is a form of injury of very rare occurrence; all the examples of impacted fracture which have come under my notice, having been, with very few exceptions, extracapsular. The distance to which the superior fragment is driven into the cancelli of the shaft varies considerably; in some cases, as in Case XLI., it does not exceed a few lines, while in other instances, as in Cases XXXVI. and XXXVII., the broken surface of the upper fragment is in contact with the compact structure of the outer wall of the trochanter, and if the force applied be very great, it may happen, as in Case XXXV., that this layer of compact tissue shall itself be broken, and then the neck of the bone is found in contact with the tendon of the glutæus maximus, or with the bursa which separates that muscle from the great trochanter. The same variety is to be noticed with respect to the angle which the broken cervix forms with the shaft of the femur; in some few cases it deviates but little from the natural angle, in the majority of cases it closely approximates to the right angle, and sometimes, though rarely, it forms an acute angle with the shaft, as in Case XXXIX. This deviation from the natural angle is not, however, the only displacement which the neck of the bone suffers in cases of impacted fractures, for in numerous examples of this injury, I have seen the neck form, with the shaft of the femur, an angle salient in front, the axis of the broken cervix being directed backwards instead of forwards: in some cases this displacement is carried to such an extent that the anterior surface of the neck, together with the anterior portion of its broken surface, is placed in front of the shaft of the bone, the posterior part of

the fractured surface alone being imbedded in the cancellated tissue, between the trochanters; the back of the neck of the bone is in such cases found resting against the posterior intertrochanteric ridge.

This alteration in the direction of the axis of the neck of the bone depends principally upon the direction in which the force which has produced the fracture has been applied, and I suspect that in such cases the eversion of the foot is more strongly marked, than is usual in examples of impacted fracture of the cervix femoris; while upon the contrary, when the cotyloid fragment is implanted in the cancellated tissue, between the trochanters, in such a manner as to have the greater part of the inferior fragment placed in front of it, the eversion of the foot will not only be less than usual, but may even be altogether absent, and inversion is the position of the foot which I have noticed in such cases; (Case XXXV.;) and I am inclined to think that the direction of the fracture and relative position of the fragments exercise more influence upon the position of the foot, than is generally supposed, and that inversion or eversion of the limb, as a symptom of fracture of the neck of the femur, is not to be ascribed to muscular action alone.

In detailing the history of extracapsular fractures of the cervix femoris, accompanied with invagination of the superior fragment, it is to be mentioned, that a second fracture (invariably present, as far as my experience reaches) traverses the posterior intro-trochanteric space;* this line of fracture generally commences near the centre of the summit of the great trochanter, where this process is weakened, by being, as it were, excavated for the formation of the digital fossæ: from this point it passes downwards and inwards, following, in general, the con-

* This space is of a semilunar form; it is bounded above by the summit of the trochanter major, below by that of the trochanter minor; its concavity corresponds to the posterior intertrochanteric ridge, and its convexity to a line drawn from the base of one trochanter to the other.

vexity of the space I have mentioned, and terminates either before it reaches the lesser trochanter, (Case XXXIII.) or else is continued through the centre or below the base of that process, (Case XXXVI.) Sometimes it is an incomplete fracture, or rather a fissure which splits either one or both trochanters, without breaking off any portion of either, (Case XXXIV.) Chassaignac alluded to a case of this description: " Le grand trochanter offrait une fracture oblique incomplete, beanté a la partie superieure, et s'effacant peu à peu vers la partie inferieure, ou l'on voyait enfin cesse toute trace de solution de continuité."

I have never seen an example of the impacted fracture, which was not accompanied by this second lesion of the bone; it appears to be the necessary consequence of the forcible impaction of the broken cervix into the shaft of the femur, and I look upon it as the second fracture in order of time; what occurs appears in fact to be this: the neck of the femur is, in the first instance, broken by the fall upon the hip, and immediately wedged into the cancellated tissue between the trochanters, by the weight of the body and prolonged action of the first shock, but as soon as the neck of the bone is broken, the femur is rotated outwards even before the action of the first impulse has ceased, thus the posterior intertrochanteric ridge being thrown forward, strikes forcibly against the neck of the femur, and we find, that in the majority of cases of this description, the upper part of the broken cervix has a tendency to pass backwards, while its lower extremity is inclined forwards; so much so, that in some instances it projects in front of the shaft as already mentioned; thus therefore two forces combine to produce the fracture through the intertrochanteric space, one of which consists in the impaction of the cervix into the shaft, while the other is found in the collision which takes place between the broken neck of the bone and the posterior intertrochanteric ridge; it would appear, however, that in some instances the impaction of the superior fragment is, of itself, capable of producing the

secor d lesion; this happens whenever the neck of the bone is driven into the cancellated tissue between the trochanters, leavi ıg the greater part of the inferior fragment in front, (as in Case XXXV.) for in such cases the cervix is driven directly against the ridge connecting the trochanters posteriorly, which it breaks off by its wedge-like action alone.

When we have opportunities of examining anatomically specimens of impacted fracture of the cervix femoris, a few months after the occurrence of the injury, we usually find, that irregular masses of bone have been deposited in the vicinity of the trochanters and intertrochanteric lines; these bony growths are sometimes very exuberant, (Case XXXVIII.) they encircle the neck of the femur to a variable extent, but are to be found in greatest quantity along the posterior intertrochanteric line, except perhaps in those cases, in which the anterior part of the broken surface of the neck of the femur projects in front of the shaft; the bony material is then deposited along the anterior, as freely as along the posterior line. These luxuriant growths of bone have been described as being simply additions made to the trochanters and their connecting lines, by which a species of socket is formed to receive the neck of the bone, and thus support the acetabulum, and enable the individual to bear his weight upon the injured limb; they are supposed to be merely provisions adopted by nature for the support of the weight of the body. We find this opinion thus expressed in the writings of Vidal. " Quelquefois la nature dispose avec une sort d'intelligence ces ossifications, de maniere a les rende propres a consolider l'articulation accidentelle. Tels sont les cas ou des anneaux osseux, complets on incomplets, provenant de la base du col ou des trochanters, ou formant un sourcil avancé à la partie superieure de la cavité cotyloide, invaginent pour ainsi dire, la fausse articulation. Tel est encore ce cas communiqué par Powel à Sir A. Cooper.*

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* Traité de Pathologie Externe par Aug. Vidal (De Cassis) Tom. ii. page 157.

The case here alluded to is thus described by Mr. Powel, in Sir Astley Cooper's work on Dislocations, page 150. "The neck of the thigh bone had been broken at its junction with the body of the bone, and had been forced into the cancellated structure between the trochanter major and trochanter minor, where it had been united with the cancelli. But the most curious circumstance in this dissection was, that *in order to give the support which the body required for a limb in such a state, an addition had been made to the trochanter major and trochanter minor, by which means they rested against the edge of the acetabulum, and in every slight change of position, would give an opportunity for the weight of the body being supported by these processes resting on the os innominatum.*"† I have devoted much time, and have examined with care, a great number of specimens of the impacted fracture of the cervix femoris, in order to ascertain the truth or fallacy of this doctrine, and I feel convinced, that the mechanical support of the head and neck of the femur is neither the sole nor the principal object for which the bony matter is deposited, for in general there is less of it below the neck than elsewhere; it is principally formed about the back of the trochanters and the posterior inter-trochanteric space; it is in fact, in my opinion, the callus thrown out for the union of the fracture, which has traversed this space in every example of impacted fracture external to the capsule that I have ever seen. These bony growths, when very exuberant, may certainly give strength to the weakened cervix, and act as a prop to support the acetabulum; all I wish to maintain is, that such is not the object for the attainment of which they are deposited, the final cause of their formation is the union of the fracture, which I have described as running through the trochanters, and the existence of which, in cases of impacted fracture, has been overlooked by the generality of writers, though it has not escaped the observation of Sir Astley

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* See plate 11, fig. 1.

Cooper. The learned baronet, however, does not dwell upon it at any length; he merely remarks, when speaking of this form of fracture, that "it frequently happens in this injury, that the fracture of the neck of the thigh bone is complicated with an injury of the trochanter major and trochanter minor."

In the case detailed by Mr. Powel, and already alluded to, I cannot help thinking, that a fracture had originally passed through the trochanters, and that the bony material deposited for its union was erroneously supposed to be an addition made to the trochanters, merely in order to give the support which the body required. We are to recollect, that in this case, the patient, an old woman, was completely bedridden from the time of the occurrence of the accident until her death, a period of fifteen months. When the patient survives a sufficient length of time, the impacted neck of the femur unites with the upper extremity of the shaft by bone, whether the fracture has its seat external to the capsule or within it, although more readily in the former instance. That it may occur in the latter also, is proved by the case of Owen Curran, Case XLII., and it is, I think, probable, that in the cases which have hitherto been published as undoubted specimens of the bony union of the intracapsular fracture, there has been an impaction or mutual interlocking of the fragments; at all events it is in such cases we are to expect osseous union most readily to occur, because the fragments are maintained in apposition and at rest; for, as remarked by Desault, "it is a principle that will not admit of controversion, that to effect consolidation nature demands the fractured portion to be approximated, and at the same time to be in a state of absolute rest." "When an impaction of one, or a mutual impaction of both of the fragments has taken place, then, under such peculiar circumstances, a firm bony consolidation of the fragments may be expected." (Adams). Still, however, the union of the broken cervix, with the cancellated tissue of the shaft, is not accomplished with as much facility or in so short a period as that of the fracture through the trochanters: the latter

I have frequently found united firmly by bone, while the neck of the femur has upon maceration become loose in the cavity between the trochanters. It generally happens in the cases under consideration, that the existence of the fracture through the inter-trochanteric space, is only revealed by *post mortem* examination, partly perhaps, because crepitus is seldom present, and partly from the circumstance, that the detached portion of bone usually moves with the shaft of the femur, for the tendinous and fibrous structures which invest the trochanteric region usually remain uninjured. Chassaignac has alluded to this; he remarks, " Quelquefois, malgre la fracture du col du femur, avec separation du trochanter, ce dernier, conservant des connexions asses resistantes avec le corps de l'os au moyen du perioste qui n'a pas été dechire, se meut simultanement avec le femur, quand on exerce une traction sur la partie inferieure du membre."

This peculiar form of fracture of the neck of the femur which I have been considering, is the only one, the diagnosis of which is occasionally attended with obscurity. In the essay which I published in the sixth volume of this Journal, (1834,) I alluded briefly to the signs which enable us to ascertain the existence of an impacted fracture of the neck of the thigh bone; the following is the passage to which I refer. " There is, however, one case in which the retraction may be but slight, although the fracture is external to the capsular ligament; it is that in which the upper fragment is driven a short distance into the cancellated tissue of the lower, the ascent of which it not only prevents, but sometimes renders the restoration of the limb to its original length, by extension, a matter of extreme difficulty; however small the distance may be, it is yet sufficient to counteract the force of the muscles which tend to draw up the lower fragment; in such a case, the degree of shortening will be much less than that which is usually the result of fracture external to the capsule. *That such is the relative position of the fragments we have reason to suspect, whenever unusual difficulty is ex-*

perienced in detecting crepitus and extending the limb to its original length." Since the preceding observations were published, I have had very many opportunities of witnessing these important injuries, and have in several instances been able to form the diagnosis of impacted fracture of the cervix femoris during the patient's life.

In this particular species of fracture of the neck of the femur, the limb is but rarely shortened to the same extent as in the ordinary examples of extracapsular fractures; in general the amount of retraction is nearly the same as in the case of fracture within the capsule, with which therefore we would be liable to confound it, were we to ground our diagnosis upon this symptom alone; but this error is avoided by attending to the other features of the injury; in the majority of cases, we find that no crepitus is elicited, upon rotating the limb, because on the one part, the neck of the femur is so firmly wedged into the cancellated tissue of the shaft, that the broken surfaces cannot be rubbed against each other, by any motion which we can impart to the limb; and on the other, the integrity of the strong fibrous and tendinous structures, which invest the whole of the region usually traversed by the second fracture, is such, that the detached portion of the bone, whether large or otherwise, in general moves with the shaft of the femur, and it is only by submitting the patient to an examination unjustifiably severe, that we are occasionally enabled to recognize the existence of this, the most characteristic sign of fracture. Again, when we endeavour to extend the limb, we find that we cannot restore it to its normal length; in some cases no extending force which even a strong man can employ, will accomplish this object, and the dislocated head of the femur will return into its socket more readily than the impacted cervix will leave the cavity between the trochanters, into which it has been received. More remarkable deviations, however, than these from the ordinary symptoms of fracture of the neck of the femur, sometimes attend this particular lesion, and cases have come under my observa-

tion, in which the patient has not only raised himself from the ground, after the fall which caused the injury, but has even walked a short distance, bearing his weight upon the injured limb. Boyer thus alludes to this remarkable fact: " On a vu des blesses qui ont pu se relever de la chute dans laquelle le col du fémur avait été fracturé et regagner leur logis"—" nous avons vu un homme qui a peu marcher pendant plusieurs jours avec le secours d'un bâton, avant que les fragmens d'une fracture du col du femur se fussent déplacés. On ne peut concevoir un fait aussi extraordinaire qu'en considérant que la cassure de cette partie du fémur est ordinairment inégale ; que l'engrenure des inegalites des ceux fragmens peut les soutenir que leur separation est moins facile quand l'un d'eux est taille en forme de coin, et engagé dans une échancrure proportionnée de l'autre."* In ordinary cases of fracture of the neck of the femur, where there is no impaction or interlocking of the fragments, when we view the limb, as the patient lies upon his back, the appearances are such, that the experienced surgeon has in general no difficulty in ascertaining the nature of the injury ; but in that particular form of fracture termed the impacted, the whole expression of the limb is very often eminently calculated to lead us into error ; the limb does not present that completely powerless aspect, which we notice in other cases of fracture of the neck of the femur, the patient has more command over its motions, and I have even seen cases, where he was able to raise the extended limb by the unaided efforts of its own muscles. It is in such cases a matter of extreme difficulty to pronounce, whether the existing symptoms are to be ascribed to fracture of the neck of the femur, or to a severe contusion of the joint, and the truth is, when the muscles around the hip joint have suffered a violent contusion, and we view the limb as the patient lies upon his back, there is much in the appearances calculated to mislead us ; in general the

* Vol. iii. p. 261.

patient is unable to raise the limb *en masse*, the inclination of the pelvis produces an apparent shortening, and the limb being usually semiflexed and abandoned to its own weight, has a tentency to rotation outwards, there is swelling in the neighbourhood of the joint, and every motion is attended with pain. Who would believe that a fracture of any part of the neck of the femur, much less an intracapsular fracture, existed in the following case? A woman, æt. 64, was treated for intracapsular fracture of the neck of the femur; she was discharged from hospital at the expiration of one month "parfaitement guerie et sans claudication!!" These cases of severe contusion of the hip-joint, the result of a violent fall or blow, are occasionally, and at a period more or less remote from the receipt of the injury, followed by a real shortening of the limb and eversion of the foot, circumstances well calculated to confirm our belief of a fracture of the neck of the femur having originally existed; but the fact is, these subsequent changes are the result of a vital process, a slow and mild inflammatory action, excited by the contusion in the cancellated tissue of the head and neck of the bone, producing an interstitial absorption, and frequently terminating in the establishment of chronic rheumatic arthritis. The records of surgery contain numerous cases such as I am now describing, and from my own observation I feel convinced that such injuries are not unfrequently mistaken for fracture of the neck of the femur. In speaking of the shortening of the limb as a diagnostic of fracture of the cervix femoris, Chassaignac observes: "Enfin je soupçonne que dans certain cas ou on a observe le racourcissement chronique du membre, dans ces circonstances ou les signes de la fracture avaient ete equivoques, il n'y point eu fracture du col, mais que le col a subi une violence qui y a determine des alterations organiques de nature diverse, par suite desquelles s'est opérée une resorption ulterieure."

In general we are able to distinguish the true nature of the

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* Gazette des Hospitaux, tome lx. p. 150.

accident by observing the relation which the great trochanter bears to the anterior superior spine of the ilium ; this relation being the same upon each side, is usually sufficient evidence of there being no other injury than contusion ; but it is to be remembered, that the normal relation of these two processes to each other being altered, does not always imply the existence of a fracture of the neck of the femur, and I can easily suppose a case, in which the position of the trochanter with respect to the iliac spine, will not serve as a diagnostic mark between contusion of the hip-joint and fracture of the neck of the femur ; for instance, a man who has long laboured under chronic rheumatic arthritis of the hip, falls upon the trochanter and receives a severe contusion of the joint, how are we to distinguish this case from one of impacted fracture of the neck of the femur ? in both the limb is really shortened, in both the foot is everted, in both there is an alteration in the position of the trochanter major ; in neither can we ascertain the existence of crepitus, in neither can we restore the limb to its natural position by extension, in neither can the patient raise the limb "en totalite;" or it may happen that in both he has supported his weight upon it, or even walked a few steps after the receipt of the injury. If we find, upon questioning the patient, that he has been long subject to pain and stiffness of the joint, that he walked lame in consequence of a gradually increasing shortening of the limb ; if, in fact, we find that he has laboured under the symptoms of chronic rheumatism of the hip joint ; and if the powerless state of the limb induced by the recent injury wears off under treatment in a few weeks, we have of course reason to believe that there is no fracture of the neck of the femur ; and, on the other hand, we are justified in supposing that some more serious injury than contusion has taken place, if after long confinement to the horizontal posture, the patient still remains incapable of using the limb. But although the previous history, and the progress of the case, may, to a certain extent, elucidate the nature of the injury which the

joint has suffered, still I believe that the means of forming an accurate and *immediate* diagnosis between the impacted fracture of the neck of the femur and a severe contusion of the hip joint, previously the seat of chronic rheumatism, are yet to be supplied. Attentive observation of the symptoms at the bedside of the patient, aided by pathological investigation, can alone furnish them; they cannot, as remarked by Lisfranc, be written in the silence of the study, away from the spectacle of suffering humanity.

Our prognosis in cases of fracture of the neck of the femur must always be unfavourable; in many instances the injury is rapidly fatal to life, and in all, the functions of the limb are permanently impaired. At all events my experience has not furnished me with a single example of fracture of any portion of the neck of the femur, which was not followed by a certain amount of lameness; whether the fracture be within or external to the capsule, whether it unites by ligament or bone, absorption seems to proceed, to a certain extent, uninfluenced by any of these circumstances, and ultimately the limb is shortened. In fatal cases death may be owing to a variety of causes; sometimes the patient dies in a few days from the effects of the shock upon a system already enfeebled; sometimes bronchitis sets in, and terminates fatally before the lapse of a week; in other cases the injury is followed by a severe irritative fever, the tongue becomes furred, the bowels constipated, the pulse quick and feeble, the patient restless and thirsty; he is unable to sleep, and frequently complains of pain about the joint; the tongue becomes more loaded, the countenance dejected and anxious, the pulse more feeble, and thirst more urgent, and sometimes accompanied with epigastric tenderness; the patient begins to talk incoherently, and raves occasionally at night; at length the tongue becomes dry and brown, sordes collect about the lips and teeth, the anxiety of countenance and restlessness increase, the pulse fails, a tendency to stupor or coma manifests itself, and then death closes the scene.

In other cases a different but equally fatal form of fever is established; in these cases the swelling and tension about the joint which is the seat of the injury are considerable, and the pain is of the most acute description; the patient cannot endure the slightest motion of the limb, or permit any examination of it to be made; the constitutional symptoms at first resemble somewhat those of traumatic fever, but very soon their whole expression is altered, and the characters which they now present are those of a low typhoid fever, analogous to those which accompany diffuse inflammation; severe rigors, accompanied and followed by an increase of local suffering, set in early, all the structures which enter into the composition of the joint become the seat of an acute suppurative inflammation, and as the case draws near to its termination, pneumonia sometimes appears, and the patient sinks under the combined effects of acute local inflammation and typhoid exhaustion.

Among all the varied alterations which the human system suffers under the influence of that inevitable decline of organization, which is the attendant upon age, there are few more remarkable than those which affect the osseous system generally, and the head and neck of the femur in particular; these modifications of structure are supposed to affect the aged female much more frequently than the male, and along with the greater breadth of the pelvis and projection of the trochanter major, to explain the more frequent occurrence of fracture of the neck of the femur in the elderly female than in man. It is especially in the bodies of those who have been bedridden for many years before their death, that we notice the atrophy of the bones; and we find that in these cases the muscles also lose their firmness; they become pale, soft, easily lacerated, and a greasy, unhealthy adeps is deposited between their fibres, and frequently seems to occupy the place of the muscular tissue; it is, however, to be remarked, that these alterations are not altogether confined to the aged, but are likewise to be seen in the adult who has been bedridden for years; in fact, long disease produces atrophy

and degeneration of the osseous system, without much respect to age, and the head and neck of the femur manifests more clearly than other bones the consequences of this atrophy; they lose their density and their weight, they can be readily divided by the knife or scissors; and such is frequently their incapability of resistance, that the osseous tissue is crushed by the slightest pressure of the finger.

This remarkable condition of the bone is owing not only to the interstitial absorption of the osseous fibres, but is also partly to be ascribed to the presence of an oily medullary matter, which accumulates in, and is infiltrated throughout the entire of the tissue of the bone; under the influence of the former, the compact structure becomes reduced to a delicate lamina of bone, so thin as to be in some cases semi-transparent, and capable of being crushed by the application of the slightest pressure; and the bony partitions which separate from each other the areolæ of the cancellated tissue, are here and there removed, so that the cells become enlarged and less numerous than natural; the absorption of the cancellated tissue is sometimes, as remarked by Cruveilhier, carried to such a degree, that a medullary canal or cavity, similar to that naturally existing the long bones, is formed in the interior of the neck of the femur: I have myself had many opportunities of verifying the remark of this accurate pathologist. The cells of the spongy tissue, thus enlarged, are filled with a greasy, fatty substance, which sometimes exists so abundantly, as to infiltrate the atrophied compact structure: in one of the cases I have detailed (Case X.) a cavity capable of containing a small marble existed in the head of the femur; upon pressure, a semi-fluid oil oozed out in considerable quantity. We find, moreover, that the strong arch of compact structure, which in the natural state lines the concavity of the neck of the femur, is in most of these cases absorbed, so that from the reduction of this bony arch, along with the enlargement of the cells of the spongy tissue, and the oily infiltration of the bony structure, even the exertion of

turning in bed will occasionally fracture the neck of the femur, and as has been truly remarked by Mr. Adams, the fracture, under such circumstances, should be looked upon more as a stage of morbid alteration, from which no amendment is to be expected, than as an accidental lesion, which the efforts of nature and the aid of surgery can be deemed adequate to repair. But whence arise these singular alterations? Are they to be looked upon merely as the effects of that decline of the vital powers which marks the approach and progress of old age? or are certain conditions of the system capable of producing them, even before the meridian of life has passed away? For my own part I conceive, that although the morbid changes in question are of infinitely more frequent occurrence in the elderly subject, it would not be difficult to demonstrate that long inactivity, confinement to the bed for years, or any cause that enfeebles the powers of assimilation, are adequate to their production, long before old age has arrived. Whatever be the cause, it is to be remarked, that the effects are not confined to the osseous system, or to the muscles of voluntary motion, but likewise extend to those of organic life; and the heart appears to enjoy the melancholy privilege of manifesting most remarkably the influence of these causes. The fatty, flaccid, and atrophied state of this organ, so frequently seen in the bodies of old, bedridden people, the analogous condition of the voluntary muscles, and the oily degeneration of the bones, are all indicative of enfeebled powers of assimilation, and of diminution in the energy of the circulating system. The consideration, however, of this subject, though of deep physiological interest, would be too wide a digression from the purport of this memoir, and I omit it the more willingly, having elsewhere dwelt upon it at some length.*

The morbid condition of the neck of the femur, which in so remarkable a manner predisposes it to fracture from the most

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* Dublin Journal, vol. ix.

trivial cause, seems in some cases to be hereditary; instances of this kind have been met with by Carmichael; and the following communication has been kindly sent to me by this distinguished surgeon.

"Rutland-square, July 2nd, 1840.

"DEAR SMITH,

"As you are about publishing a paper on fractures of the neck of the femur, an extraordinary instance of hereditary predisposition to that brittle state of this bone, which renders it liable to fracture, may not be unacceptable. The first of the family, to which I allude, that met this accident, was a married woman about forty years of age; the second was unmarried, and upwards of sixty when the accident occurred; the third was a tall, stout man, æt. about sixty-five at the time that he fractured this bone by slipping off the curb-stone of the flags in the street. The accident occurred to a fourth of the same family about a month since—she is an old lady upwards of eighty: the injury was produced by her foot being caught in the carpet when walking across her drawing-room; she fell with force upon the trochanter. She remains in bed, and has suffered so considerably by the shock, that, in all probability, she will not long survive. I have met with several instances of very old and very weakly persons who only survived this accident a few days; at present I recollect two of them: the one was Mrs. Labouthere of Dorset-street, who was upwards of eighty, and who died three days after the accident. The other was the late Lord B., about æt. 70, but worn down by extreme dyspepsia of long standing. This nobleman also fractured the neck of the femur by a fall on the hip, owing to his foot being entangled in the carpet. He only survived the accident three or four days. I have stated briefly all the facts connected with these cases likely to be of interest, and believe me to be,

"Truly yours,

"RICHARD CARMICHAEL.

"*Robert Smith, Esq.*"

The Museum of the Richmond Hospital contains several specimens of fracture of the neck of the femur, the result of fragilitas ossium, and also examples of the same lesion, produced by the deposition of cancerous tubercles in the spongy tissue of the cervix; to these, however, it is not my intention to allude at present.

From what has been stated in the preceding pages, and from the evidence afforded by the *post mortem* examination of fifty specimens of fractures of the neck of the femur, forty-two of which have been detailed, I think I am justified in deducing the following conclusions:—

1. A slight degree of shortening, removable by the extension of the limb, indicates a fracture within the capsular ligament.

2. The degree of shortening, where the fracture is within the capsular ligament, varies from a quarter of an inch to one inch or one inch and a half.

3. The degree of shortening, when the fracture is within the capsule, varies chiefly according to the extent of laceration of the fibro-synovial folds which invest the neck of the femur.

4. In some cases of intracapsular fracture the injury is not immediately followed by shortening of the limb.

5. This absence of shortening is generally owing to the integrity of the fibro-synovial folds.

6. In such cases the retraction of the limb may occur suddenly, many weeks after the receipt of the injury.

7. This sudden retraction of the limb, which indicates a fracture within the capsule, is, in general, to be ascribed to the accidental laceration of the fibro-synovial folds.

8. The degree of shortening, when the fracture is external to the capsule and not impacted, varies from one inch or one inch and a half to two inches or two inches and a half.

9. When a great degree of shortening occurs immediately after the receipt of the injury, we usually find a comminuted fracture external to the capsule.

10. The extracapsular fracture is generally accompanied by fracture with displacement of one or both trochanters.

11. The extracapsular *impacted* fracture is generally accompanied by fracture without displacement of one or both trochanters.

12. In such cases the fracture of the processes unites more readily than that of the cervix.

13. The degree of shortening, when the fracture is impacted, varies from a quarter of an inch to one inch and a half.

14. The exuberant growths of bone met with in these cases have been by many erroneously considered to be merely for the purpose of supporting the acetabulum and the neck of the femur.

15. The difficulty of ascertaining crepitus, and of restoring the limb to its natural length are the chief diagnostic signs of the impacted fracture.

16. The position of the foot is as much influenced by the obliquity of the fracture and the relative position of the fragments, as by the action of the muscles.

17. Inversion of the foot may occur in the intracapsular, extracapsular, or impacted fracture of the neck of the femur.

18. When in the intracapsular fracture the lower fragment is placed in front of the upper, the foot is usually inverted.

19. When in the extracapsular fracture with impaction, the superior is driven into the inferior fragment, so as to leave the greater portion of the latter in front of the former, the foot is generally inverted.

20. In cases of comminuted extracapsular fracture without impaction, but with separation and displacement of the trochanters, the foot may be turned either inwards or outwards, and will generally remain in whatever position it has been accidentally placed.

21. The consolidation by bone of the intracapsular fracture is most likely to occur, when the fracture is also impacted.

22. Severe contusion of the hip-joint, causing paralysis of the muscles which surround the articulation, is liable to be confounded with fracture of the neck of the femur.

23. The presence of chronic rheumatic arthritis may not only lead us to suppose that a fracture exists when the bone is entire, but also when there is no doubt as to the existence of fracture, may render diagnosis difficult as to the seat of the injury with respect to the capsule.

24. Severe contusion of the hip-joint, previously the seat of chronic rheumatic arthritis, and the impacted fracture of the neck of the femur, are the two cases most liable to be confounded with each other.

25. Each particular symptom of fracture of the neck of the femur, separately considered, must be looked upon as equivocal: the union of all can alone lead to correct diagnosis.

I cannot terminate this memoir, without expressing myself grateful to the surgeons of the Richmond Hospital, for the kindness and liberality with which, upon this and many former occasions, they have permitted me to make use of the preparations contained in their valuable museum; and if, availing myself of this permission, I have been enabled to dispel any of the doubts and uncertainties which envelope the important subject of which I have treated; if the preceding pages contain a single observation calculated to elucidate the diagnosis of injuries of the hip-joint, the object of this memoir is fully accomplished.

Art. II.—*Observations on the Closure of the Eye in Sleep.*

By Gabriel Stokes, M.D., M.R.C.S.I.

The closure of the eye in sleep is an action, which appears to me to be erroneously described and explained by some physiologists, who are still looked up to and quoted as high authority, and by others who have written at a later period, and who have adopted what I conceive to be the true explanation of the phenomenon, this explanation has not been by them sufficiently proved.

Now it is in the study of the effects produced by paralysis of

the orbicularis palpebrarum that we can discover data on which to found a true explanation of the closure of the eye in sleep. Let us in the first place examine what the received opinion on this subject has been: most of the authorities in anatomy are silent upon it: Winslow, Meckel, Boyer, and Cloquet, make no allusion whatever to it; Bichat, however, observes, "that the closing of the eye is performed in a different manner in wakefulness and in sleep. In the first instance the closing of the eye is active, and is produced by the voluntary contractions of the middle portions of the orbicularis, the curved fibres of which become straight. While in the second case (in sleep) the approximation of the eyelids is *purely passive,* produced by the fall of the superior eyelid, owing to the relaxation of its elevation; a phenomenon quite analogous to what is observed in cases of paralysis of this muscle."

Adelon goes still further, and thinks that, under ordinary circumstances, the closure of the eye, both in sleeping and waking, is produced by the alternate contractions and relaxations of the levator alone.

Bichat's opinion is still, however, very generally taught, although more correct views have been published by some late writers, which shall be noticed presently.

Let us now turn our attention to the disease termed lagophthalmia, or paralysis of the orbicularis palpebrarum, and we shall find evidence to disprove the doctrine of Bichat, and his followers.

Sir Charles Bell, in his work on the nervous system, speaking of paralysis of the face produced by division or injury of the portio dura of the seventh pair, says at page 86, "The eyelids from thenceforth stand apart, the eye would be permanently uncovered, the cornea become opaque, and the vision of the eye lost."

Further, in the appendix to the same work, where a number of cases of the paralytic affection of the face are given, in Case

II. page 6, it is stated that,—"the eye is open in sleep, the eyeball turned up."

Again, in Case III. page 7, in a case where the disease was of several years' standing, and where there was considerable disease of the eye; it is observed, that, "his (the patient's) wife states that he never closes the eye, not even when he is asleep."

In Case VII. page 21, "in sleep the right eyelids are closed as usual, but the left eye (the one affected) remains uncovered."

In Case X. page 35, "During sleep the eyelids remain wide open."

In Case XXVII. p. 68, "When the child sleeps, the aperture formed by the want of approximation of the eyelids drops about the middle of the cornea.

Many other cases proving that when the orbicularis is paralyzed the eye does not close in sleep, could be quoted from authors of nearly equal celebrity as Sir Charles Bell; but we shall be content with recording one case that came under our own observation in the medical wards of the Meath Hospital, in the person of a young man admitted under the care of Doctor Stokes: the following are some of the particulars of his case.

Patrick Boyle, aged 22, a sawyer, states that he always enjoyed good health until about two months ago, when from exposure to cold while overheated, he was seized with violent pain in the right side of the head and face, which was almost immediately followed by paralysis of the muscles of the right side of the face, which has continued ever since. The face has a twisted appearance, particularly when he speaks or laughs; he has lost the power of whistling; and in eating, the lips on the right side frequently fall between the teeth; the eyebrow is depressed, and cannot be elevated, as on the opposite side; the right eye remains constantly open; there is occasionally very slight motion in the orbicularis, but he cannot at all effect the closure of the eye; the eyeball is turned up, and there is a patch of superficial ulceration commencing at the lower part of

the cornea; complains of great pain in this eye when exposed to the light. During sleep the *right eye remains open*, and the eyeball is turned up as in the cases described by Sir Charles Bell. Besides this affection of the nerves, this individual labours under extensive organic disease of the abdomen, and is reduced to a state of extreme marasmus.

After lingering for several weeks in hospital, this patient gradually sunk, worn out by a constant diarrhœa, and profuse perspirations. These symptoms were accompanied by a voracious appetite, which continued to the last; the paralysis of the face also continuing unchanged. As in this form of paralysis opportunities of making a *post mortem* examination are exceedingly rare, I seized the opportunity now offered to determine, as far as one case can go, whether this form of paralysis depended on organic lesion of the nerve, or was merely functional. Thirty-six hours after death the body was examined; an incision was made through the parotid gland, and the trunk of the posterior nerve of the seventh was exposed, as were also the plexus which it forms in this gland, and the branches proceeding from it to the muscles of the face. No morbid appearance whatever could be detected, the nerves presented their natural appearance in every respect, there was no atrophy or softening. The fibres of the orbicularis were exceedingly pale and indistinct, as were also those of the other muscles of the face; the levator palpebræ recti, and oblique muscles, were of their natural size, colour, and consistence. The eyeball was examined, but the only morbid change that could be detected was a slight degree of opacity in the lower part of the cornea. The brain was then abstracted, and the origin of the portio dura carefully examined, but without being able to detect the slightest trace of morbid action, either in the nerve itself, or in the portion of the brain from which it takes its origin; neither could any disease of the brain itself be discovered. So that as far as one case can establish a fact in medicine, it would appear that this particular form of paralysis is a functional and not an organic disease.

I have introduced here the details of this dissection, because, few dissections in cases of this disease are on record, and those few for the most part are cases in which the disease was produced by tumours or abscess pressing upon the nerve.

But to return to the mechanism of the closure of the eye in sleep. It is quite clear that if the eye remains open during sleep where the orbicularis is paralyzed, that the doctrine taught by Bichat, namely, that the eye closes passively from relaxation of the levator, is erroneous: there can be no doubt whatever of the fact, that the eye, under such circumstances, does remain open; and yet in such cases, the levator becoming relaxed in sleep, *the eye does not close*, which it should do if it was merely a passive action, or the fall of the eyelid from its own weight. What then is the power by which the eye is closed in sleep? The answer to this question will be found by examining into the nature of the orbicularis muscle. This muscle presents all the anatomical and physiological characters of a sphincter muscle, and as such is not only possessed of a contractile power which is directed by the will, but also of an involuntary power of contraction independent of the will; by its voluntary powers during wakefulness the function of winking is performed, which is produced by the alternate contractions and relaxations of the orbicularis and the levator. But when sleep comes on, both these muscles lose the voluntary power of contraction *simultaneously*, and the eyes would remain open, but that the involuntary power of contraction still remaining in the orbicularis, in virtue of its being a mixed muscle, the eye by it becomes gently closed.

Mr. Partridge in the article "*Face*," in the Cyclopædia of Anatomy and Physiology, is the only author that I am aware of that gives this explanation of the closed eye in sleep, but he brings forward nothing to disprove that this action is not passive, but the observation, that resistance is met with in endeavouring to open the eyes of a sleeping person, and does not appear to

be aware of the decisive evidence against the theory of passive closure derived from a study of the phenomena attending paralysis of the orbicularis palpebrarum.

Mr. Partridge, in the same excellent article, adopts the division of the orbicularis proposed by Riolan, namely, into the orbicular and palpebral portions, and supposes, that the orbicular portion is a purely voluntary muscle, while the palpebral possesses both a voluntary and involuntary power of contraction. This I think, is at least doubtful.

First. Because there is no analogy for this in any of the other sphincters.

Second. An injury of the facial nerve affects both portions of the muscle in a similar manner.

Third. Their acting sometimes independently of each other does not prove that they are physiologically distinct, for we have abundant examples in the muscles of animal life, where different portions of the same muscles act independently of each other.

From these considerations, I am inclined to consider the entire of the orbicularis as a mixed muscle, and not merely the palpebral portion.

ART. III.—*An Inquiry into the Management of the Second Stage of Labour, (Mechanism of Parturition.)* By EDWARD WILLIAM MURPHY, A.B. M.D., late Assistant Physician to the Dublin Lying-in Hospital; Lecturer on Midwifery, &c.

HAVING at a former opportunity entered upon an inquiry into the management of the first stage of labour, for the purpose of determining, if possible, the validity of opposite rules of practice, I propose, at present, to examine in a similar manner the second stage, in order to derive from its consideration some definite conclusions upon disputed points.

By the second stage, I mean that period of the labour which

commences when the os uteri is fully dilated, and terminates in the complete expulsion of the child.

From the time that the os tincæ becomes completely dilated, a series of important changes occurs. The scarcely yielding head of the child is gradually forced through a firmly resisting bony cavity adapted to it so exactly, as to require all the facilities which smoothness of surface, combined with a beautiful mechanism can give to effect its passage, without seriously injuring the intervening soft parts.

It is in this stage that the injurious effects of severe labour are most likely to occur, and that the utmost caution is required, to avoid such as may be the result, equally of precipitancy as of neglect. In proportion, therefore, to its importence, its consideration demands serious attention.

In my former paper* it was stated, that in the first stage of labour the fundus uteri acted upon the os tincæ, with a moderate degree of force; in this stage, however, a marked change takes place, the gradual escape of the head from the uterus diminishes its tension and increases its contractile power, the abdominal muscles and diaphragm are called into action, and all combine to form an expulsive force of great power, which acts in moving the head slowly forwards through the pelvis, in adapting it to its different inequalities, and ultimately in overcoming the elastic tension of the perinæum.

We have thus the fundus uteri, aided by these muscles, first acting against the unyielding bones of the pelvis, and therefore reacting upon the head itself, and again upon the perinæum, sometimes scarcely less resisting. In the whole of this process there is a continued struggle between opposite forces, and all the varieties of rapid, natural, tedious, and difficult labour only mark the different proportions that these forces bear to each other. When the power exceeds the resistance, the labour is rapid, sometimes instantaneous; and any evil effects, as hæmorrhage,

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* Dublin Journal, vol. xi. p. 180.

syncope, inversion, &c. &c., occur subsequently to the expulsion the child, and whatever embarrassment they may give the practitioner, depends upon the severity of the symptoms which follow. But where the resistance exceeds the power, difficulties of a different kind present themselves, arising from the impossibility that there sometimes is of ascertaining its degree, or in stricter language, the ratio which these forces bear to each other. In the examination of such labours, we have, therefore, to consider, the vigour of the uterus as compared with our estimate of the magnitude of the obstacle which it has to overcome, and our success in the management of this stage will depend on the accuracy with which we determine the relation between them.

The power which the uterus possesses of maintaining its action for a considerable length of time, has been already discussed in the first stage of labour; its duration in the second cannot be so clearly proved, because a continuance of its action for any lengthened period implies a resistance from the pelvis and a pressure of its linings, which it might be dangerous to hazard, and which, if suffered to proceed, would be accompanied with inflammation in a greater or less degree, which would altogether alter its nature. If it be free from such causes of derangement, it will sustain its action uninjured, for a considerable time; nor is it so much the length of time which the uterus may take to effect the passage of the pelvis, that demands our attention, as the nature of the action as compared with resistance which it has to overcome. In the first stage of labour, the action of the uterus was not found to be uniform, but to observe periods of activity and repose: in the second stage, though throughout more powerful, the same phenomena may be observed, and especially in those cases in which the resistance is great, the uterus appears to shun violence, and seeks to gain upon the difficulty, rather by moderate efforts, renewed after short intervals of rest, than by exerting its ordinary force; such suspensions of uterine action, are essential, not only to maintain the vigour of the uterus, but also to diminish any irritation which may exist in the passages; they are accompanied by no constitutional

disturbance, and should be carefully distinguished from suspension of uterine action, depending upon a very different cause, that which arises from a loss of power in the uterus, and an inability to continue an unequal contest. Much confusion and controversy on the management of this stage, has had its origin in not sufficiently distinguishing these different causes of the same effect, and if the truth were known, more than one case of labour would be found delivered for, and quoted as "uterine inertia," for which there was no other evidence than suspended action, while in many cases the duration of the second stage would seem to occupy a period too long for safety, if we applied the same rule of time indifferently to all cases, and did not bear in mind, that the liability of the soft parts to inflame, of the child to be injured, and even of the uterus itself to suffer, is much more likely to be the result of violent, though short collisions, between these opposing forces, than where the moderate, but prolonged efforts of the uterus are slowly, though certainly, advancing the presentation.

The management then of the second stage may be best understood by examining the nature and degree of the resistance which the uterus has to overcome; this may depend upon some deviation in the presenting part, though the pelvis be regular, upon a deviation or deformity in the pelvis, the presentation being regular or both combined. In labours where the head presents, the deviations in the presentation which gives rise to delay or difficulty are stated to be:—1st. That in which the forehead is anterior, the frontal-bone corresponding to the right or left cotyloid cavity, (fronto-cotyloid presentation, third and fourth position of some, fourth and fifth of others.) 2nd. Where the chin departs too much from the chest of the child. 3rd. Where the face presents. 4th. Where the hand and arm descend with the head.

Of these varieties the first has given rise to much difference of opinion as to its management, some insisting upon the necessity of changing this position (the fronto-cotyloid) to the occipito-cotyloid by direct interference, which others think equally un-

called for: and as it is one of the many instances in which authorities contradict each other in their directions, it becomes one of the questions which it is the object of this paper to determine.

Dr. Denman states, that "in its passage through the pelvis the head of the child, which at the superior aperture was placed with one ear to the ossa pubis, and the other to the sacrum, or with *different degrees of diagonal direction*, undergoes various changes of position by which it is adapted to the form of each part of the pelvis with more or less readiness according to the size, the degree of its ossification, and the force of the pains.

"With all these changes, whether produced easily or tediously, in one or many hours, the practitioner should on no account interfere, provided the labour be natural."*

Dr. Merriman observes: "This kind of labour is not very unmanageable: the head may be longer than ordinary in passing through the pelvis; but if this be well formed, and the pains are strong, it will at length be excluded, and, in the majority of cases, the child will be born alive." Having then alluded to Smellie's and Exton's practice of removing the forehead to the left side of the sacrum, Dr. M. remarks: "It is a practice that may occasionally be adopted with advantage; but I have seen one instance in which the space opened between the pelvis and the child's head by passing the finger, allowed the funis to prolapse, and thus destroy the infant."†

Dr. Blundell speaks with equal caution, "If the softer parts are lax, the pelvis large, and the finger dexterous, I will not assert that you may not be justified in doing what I myself sometimes have done, I mean rectifying the position. Finding that the face of the child is forwards, that the head is above the brim, that the passages are relaxed and capacious, you may put your hand into the uterus, you may lay hold of the head as you would lay hold of any other body, and you may gently place

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* Denman, p. 178.

† Merriman, Diff. Part. p. 44.

the head with the face in the side of the pelvis; all this, I say, may be done, may be commended, perhaps, sometimes; but beware lest you rashly contuse or lacerate the softer parts." He further adds, "In the majority of cases, however, and especially if you are as yet inexperienced in the practice of midwifery, *you may trust with confidence to the natural efforts.*"*

Dr. Collins gives as the result of his experience, "that all attempts to alter the position of the head in the early period of labour, when found presenting in either of the above mentioned ways, (viz.: face and face to pubis presentations,) are, in my opinion, injudicious."†

On the opposite side we find the practice of Smellie again taken up, and warmly recommended by Dr. John Clark, a practitioner whose opinions have always received a merited respect. Burns and Dewees are also its advocates. Burns says, "As this presentation, whichever way the head turn, is always a production of a labour more or less tedious than a natural one, we should co-operate in the acceleration of the process of turning the head. If it be discovered early it is certainly proper to *rupture the membranes* and turn the vertex round, which is easily accomplished. If the opportunity be lost we may still give efficient assistance by introducing either one or more fingers between the left side of the head near the coronal suture or the temple and symphysis pubis, and pressing steadily during a pain against the frontal or parietal bone."‡

Dewees is still more decided on this point, and in his usual energetic language observes: "We do consider a perfect knowledge of this presentation (for it is far from being an infrequent one) as a matter of high moment to the practitioner. * * * Such positive advantage does a knowledge of this presentation and the mode of reducing it, give one practitioner over another that may be ignorant of it, that he is often able to terminate a

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* Blundell, pp. 277—279.

† Collins, Pract. Treatise, p. 35.

‡ Burns, pp. 394—395.

labour in a few minutes, as the other might be hours who was unacquainted with its mechanism. So decided, for this reason, is this knowledge to the suffering woman, that we hold a man incompetent to practise midwifery under its greatest advantages who cannot detect and immediately change the malposition of the head, and thus abridge, sometimes for several hours, the misery and pain of his patient."*

If such were to be the test of competency to practise, it is to be feared that few could venture upon a path so full of intricacies, if an occasional trip in ascertaining this presentation should disqualify him. So far from considering it to be so easily detected that a tyro should know it before he should presume to practise, I believe it to be by far the most difficult properly to understand of all the varieties that are met with, and, notwithstanding the confidence with which Dewees speaks of it, I am disposed to think he had been himself deceived with regard to it; that, in fact, where he imagined he was rectifying the malposition, he was only doing what nature would have done without his assistance in merely following her ordinary course.

As a proof of the difficulty of understanding this presentation, it is sufficient to say, that the whole description given of it by Dewees, (who has followed Baudelocque,) has been completely contradicted, not by a tyro, but by one who has had much experience, and has shown great acuteness of observation. Naegelé has given the subject of presentations his direct and persevering attention, and has observed that the head, which is expelled in the second position, enters the cavity of the pelvis in the third or left fronto-cotyloid position. So that if an examination were made in this stage, the third position would be found, in the language of Dewees, "far from an infrequent one," and, if acting on his advice, the practitioner would not suffer the process to proceed, but would set about to rectify; he would naturally fall into the error of supposing, that by his manipula-

* Dewees, Lond. 1835, p. 244—5.

tion he was obviating a difficulty which had no existence. This difference also about a matter of fact will sufficiently show, that men of acknowledged experience are liable to deception on a point, an accurate knowledge of which Dewees believes to be essential to the beginner.

If, in addition, it is recollected, that the early writers in midwifery, with as much confidence as those in the present day, described the head as passing in the conjugate diameters, which later observers found to be untrue, that even their descriptions, though given with all the minuteness of assumed accuracy, are now called in question, we would admit, perhaps, with Wiedemann, " that in no branch of knowledge does one so long remain a beginner, from the difficulty of the subject, as in the one which we are now treating of."

In fact, few of any experience but will acknowledge the frequent liability to error in determining the position of the head: such difficulty has been candidly admitted by Naegelé, and in stating his conviction, that preceding observers have been mistaken, he adds, " I request those who may be inclined to be displeased with this assertion, which is an open confession of what I am convinced of, to consider how difficult even the greatest masters have described the diagnosis of the head position to be, what has been said on this subject by men, for instance, like La Motte, Pusos, Rœderer, Berger, Saxtorpt. When Rœderer, an observer of the greatest accuracy, says, in speaking of the position of the head when the face is turned towards the pubis: 'Neque penitus cognosci antequam caput est natum.' When a Smellie freely confesses that he had been deceived, who in the world would venture to assert that he could not fall into a similar predicament, or declare his belief in the possibility of others having erred in their results, were heresy."*

The candid acknowledgment of such eminent writers is especially valuable, as it at once affords an answer to these state-

* Naegelé's Mechanism of Parturition, by Rigby, p. 11.

ment, and relieves the patient observer from much of the disappointment which would raise from the difficulty he finds in determining a point which appears so exceedingly simple in print. A little reflection will satisfy us how such deceptions are produced. It must be recollected, that the impressions conveyed by sight and touch are by no means the same, and though we can at once determine the direction of the sagittal suture, when we see the head in a given position, and observe the obvious difference of the anterior and posterior fontanelles, yet it will not be found quite so easy, when we are deprived of all the relations of distance which the eye embraces, and can only depend on the power which we may have acquired of tracing them in detail by our sense of touch. When the head is high in the cavity of the pelvis, we generally feel the sagittal suture, which leads us to either the anterior or posterior superior angle of the parietal bone, if the anterior fontanelle is diminished by the bones overlapping, or if the posterior be increased, (the bones not being ossified sufficiently;) in either case the fontanelles may resemble each other, and *the exact* direction of the suture itself may be uncertain, so that the second and third positions may be confounded, and even the first and third where there is want of sufficient tact, and hence the inexperienced hand might, by interfering, change the first position into the third, and produce the mal-position it was intended to avoid. But without committing such a mistake, the attempt to change the third position prematurely into the second, is only forcing the head into a direction for which it is not yet prepared, and may thus produce delay in its advance. I cannot therefore agree in the rule laid down by Burns, that "when the head is high and the membranes entire, they are to be ruptured and the vertex turned round," because we thus deprive the soft parts of their natural protection, and the head of the means by which its adaptation to the inequalities of the pelvis is more easily effected for the purpose of placing it in what we suppose its correct position, one which, if left to itself, it would naturally

assume as the result of a progressive series of motions, which our interference might totally derange.

Whether we effect the object sought for, viz. to shorten the duration of the labour, is still questionable; and when, in addition, we reflect of the hazard of exposing the soft parts to injury, and the risk there may be to the child's life, we would pause before adopting such a rule. The great desideratum to be accomplished by such means, and which has been described with so much pathos as "abridging for several hours the misery and pain of the patient," an argument which carries with it all the plausibility which appeals made to our natural prejudices must give, requires, perhaps, somewhat more consideration than would, at first sight, appear. The views which Naegelé has taken of this question coincide so entirely with my own, that I gladly avail myself of his language. He says, "If we admit, for which I think I have adduced sufficient grounds, that proportionate difficulties according to the constitution of each individual, and an effort of strength (requisite in childbirth) are inseparable from the nature of this process, we must conclude, *that an abbreviation of this process, though performed by an able hand,* before the salutary change on which the preservation of the health depends, has taken place in the organization of the mother,—that a premature and sudden removal of difficulties cannot be a matter of indifference,—that such a violent interference with the functions of nature must incur the risk of destroying the health, though this should not ensue for some time after."* These remarks were made by him in reference to face presentations, but apply with equal force to those at present under consideration. That labour should be prolonged is not, therefore, to be considered a sufficient justification for intermeddling with nature, more especially as it is evident, that she has not been sufficiently studied, nor are her operations so perfectly understood, that we can venture to supply her place; it is time enough to wait until

* Naegelé's Mechanism of Parturition, by Rigby, p. 89.

we know that she cannot accomplish her object, which can be readily ascertained by finding the head stationary, though the pains be vigorous, long before any dangerous symptoms present themselves. The head may then be dislodged from its situation, and gently moved from the position into which it has been forced, to that which offers least resistance to it; and we shall soon find, that once the head is disengaged, it will glide naturally into the widest space, if we do not, by our fancied sagacity as to what that space is, force it into some other equally unfavourable position.

These objections to the rule, so strongly advocated by Dewees, Burns, and others, receive additional support from facts. I shall present the result of a series of closely observed cases, which demonstrate that where the head enters in the third position, it is generally expelled in the second; thus proving the accuracy of Naegelé's assertion, that where it maintains the third position throughout, it will be safely expelled by the natural efforts; and that the results derived from hospital reports prove the latter position not to be by any means so frequent as is stated. Here it will be necessary to review briefly the manner in which the head descends through the cavity of the pelvis, which, as it is the result of my own observation and of another professional friend, and as it confirms in almost every point Naegelé's description, will afford an additional proof of the accuracy of his experience.

So long as the head is not fairly engaged in the brim of the pelvis, the result of any examination is altogether uncertain, the position of the head is more influenced by the action of the uterus and the motion of the child, than it afterwards becomes, and therefore the head may enter and pass through the cavity of the pelvis in a position precisely opposite to that which was indicated, while above the brim the characteristic signs also of the different positions are much more difficult to ascertain at this stage of its advance, so that it is not until the head becomes fixed in its position, and that its motions are more directly

under the influence of the pelvis, that its direction can be predicted with any certainty. We then find its advance to be effected by a combination of distinct motions harmonizing in such a manner as to place the head always in the direction in which the pelvis will admit the widest space. There is first a slight motion of rotation on its longitudinal axis, so as to bring the side of the head corresponding to the pubis rather lower than the opposite one ; so that the ear and parietal bone of that side can be distinctly felt, the sagittal suture being directed towards the sacrum ; the object of this partial rotation is obviously to avoid bringing the bi-parietal measurement of the fœtal head (its greatest transversely) directly between the promontory of the sacrum and the pelvis ; it may be also that the resistance which the sacrum offers at the brim, to the head descending in the bi-parietal axis, causes the pelvic side of the head uniformly to descend first, bringing a line cutting the bi-parietal axis at an acute angle, in apposition with the antero-posterior measurement of the pelvis. If this line be taken as an axis, there is a second motion of rotation performed upon it in the lateral direction of the pelvis, (which can be best ascertained in second positions of the head,) by which when the occiput passes the brim, the sinciput then appears to descend until it is arrested by the convergence of the planes of the ischia ; it then rises slightly, while the occiput again descends until the head is expelled ; thus the head appears to oscillate round this its transverse axis. The posterior fontanelle first being lowest, then both appearing to be on the same level, the anterior sometimes lower, and ultimately the posterior descending, and continuing to do so until it escapes under the arch of the pelvis. In some instances in which the pelvis is very wide, or that the planes of the ischia do not sufficiently converge, the sinciput will descend too much, bringing the occipito-frontal axis of the head across the cavity of the pelvis, thus impacting the head, and arresting the descent of the occiput, a deviation which can readily be detected by finding the anterior fontanelle more central and dis-

tinct than usual. Again, the sinciput will continue to descend and become the most depending part, upon which the tumour will be found ; when this takes place the anterior fontanelle also can be easily felt, but its situation is nearly the same as in fronto-cotyloid positions of the head, when the occiput descends first, and therefore might be confounded with them. The third motion of rotation is that generally described, by which the head, as it descends, turns from the transverse and oblique measurements into the antero-posterior. This rotation Naegelé states to be only partially accomplished, the head being generally expelled through the outlet in the oblique direction, the occiput rising as it escapes towards the arch of the pubis ; the rotation not being completed until the head is nearly protruded. As far as my observations go, this seems rather the exception than the rule, as in most of the occipito-cotyloid positions the occiput passes under the arch, and may be felt dilating the vulva before the head is expelled by the fourth and last motion of rotation round the arch as a centre ; the head, however, still maintains the inclination given to it in the first instance, and the pubic side of the head comes out a little before the opposite one : but even here there are many exceptions. Thus the passage of the head, and its complete expulsion, are effected by four rotations, two on the head itself,—the first on its longitudinal axis, the second on its transverse,—and two on the vertebral column, the one in the lateral, the other in the vertical direction ; but as the head may be rotated laterally on the vertebral column in any given direction of the pelvis, its variety in this respect has given rise to the classification into positions of the head, which, according to the fancy of writers, have been enumerated from two up to eight, from the two positions (occipito-cotyloid and fronto-cotyloid) most obviously opposed to each other, to all the possible positions in which the head might be placed. It would be a matter almost of indifference which classification should be selected, but as it assists us better in discussing the question now under consideration, we have adopted that which

divides these positions into four, viz. the left and right occipito-cotyloid (1st and 2nd,) and the left and right fronto-cotyloid (3rd and 4th.)

The position and progress of the head was examined in seventy-four cases, and in order to avoid error, I obtained the assistance of my friend Dr. Doherty, to whom I am indebted for some valuable results on this question. Of these seventy-four cases, the following table will show the number in each position.

First Position.	Fourth into First.	Second Position.	Third into second.	Third Position.	Irregular.	Face.
43	3	11	9	2	4	2

It will be seen that the second positions are rather more than those changed from the third into the second; but this difference was deceptive, because many of those given in the second position were examined when the head had descended too low to determine the direction in which it entered the pelvis. With a few exceptions the ordinary course, when the head entered in the third position, was to change as it advanced into the second, and this without appearing to cause any difficulty or delay in its progression. I shall give two cases to illustrate this, one of them observed by Dr. Doherty, the other taken from my note-book.

Case I.—At eleven o'clock, A. M., an examination was made, and as the os tincæ was found to be dilated to one-half, the finger touched the antero-superior angle of the left parietal bone. The anterior fontanelle being directed to left acetabulum, and on a plane lower than the posterior. Twelve o'clock. Os fully dilated; head beginning to go round. Quarter past four o'clock. Head transverse with the anterior fontanelle still lower. Quarter to two o'clock, P. M. Fontanelle beginning to descend being opposite right acetabulum, and on the same plane with the anterior. Two o'clock. Posterior fontanelle continuing

to descend, and most depending. Half past two. Child born in second position. There was no tumour on the head. In this case there was no difficulty presented; and the descent of the head accomplished in three hours and a half.

Case II.—A lady was confined of her first child, and not being very young a tedious labour was expected. About twelve o'clock, noon, the first stage commenced; and at half past nine o'clock, P. M., the os tincæ was half dilated, with the head in the third position. At eleven o'clock the dilatation was completed, head transversely in the cavity, both fontanelles on the same plane. At ten o'clock, A. M., the occiput and a part of left parietal bone began to press on the perineum; at two o'clock got partly under the arch of the pubis, and remained, from rigidity of the perineum, nearly in the same position until six o'clock. At half past six o'clock the child was born safely. A large tumour was found behind the left parietal tuber, occupying the space over the lambdoid suture, between the parietal and occipital protuberances; no injury of any kind occurred. The first stage of the labour occupied eleven hours; the second seven; and the head passed out in the left oblique diameter of the outlet. In both these cases the rotation from the third into the second position of the head was carefully noted, and also that alternate descent of the anterior and posterior fontanelles. They will serve as examples for the rest, in none of which did the labour exceed twelve hours. Those cases in which the head was expelled in the third position were only two, both expelled naturally, one within seven, and the other within twelve hours from the commencement of labour. In the latter the head had been marked from pressure; and as the labour was evidently delayed to twelve hours from arrest, it seemed to contradict the conclusion laid down. It was, therefore, necessary to ascertain whether this position caused similar arrests in other cases, or that the duration of labour was much increased. I have since been furnished with the particulars of six cases of the third position, which put the question at rest.

No.	Time of Labour.	Sex.	Number of Children.	Age.
1	Eight hours.	Girl.	Second.	23
2	Do.	Boy.	First.	19
3	Five hours.	Girl.	Fourth.	28
4	Two hours.	Girl.	Fifth.	30
5	Two hours.	Girl.	Second.	25
6	Two and a half hours.	Girl.	Tenth.	36

From this Table it will be seen that none of the cases exceeded eight hours' duration, though one of them was a first child and a boy, while of the remainder three were under three hours. That the expulsion of the head in the third position does not necessarily prolong the labour, is further confirmed by Dr. Collins's valuable Report; of the cases detailed in his "Practical Treatise" there were—

Under 12 hours, ... 6 cases.
„ 24 „ . . . . . 4 „
Above 24 „ . . . . . 1 „

And amongst those which exceed twelve hours, there were three in which the pelvis was very defective, and required to be delivered by the crotchet.

The following Table will show the comparative frequency of this position of the head, according to the returns of the Paris and Dublin hospitals.

	Total Cases.	L. Ft. Cotyl.	R. Ft. Cotyl.	Face present.	Being
Boivin, . .	20,517	109	92	201	1 in 102
La Chapelle,	22,243	164	92	130	1 in 171
Collins, . .	16,654	..	..	12	1 in 1387

In the French returns it is probable that the positions were entered as ascertained by examination, while in Dr. Collins's they are given according to the manner in which the head was expelled, which would explain the discrepancy in the proportions given, as it is quite possible that in the French Report

some were entered as in the third position previous to the change into the second. It will be admitted, however, that this position occurs but seldom. It has been shown that where it is met with in a well formed pelvis the labour is not delayed, at least to any injurious extent, and therefore seems to contra-indicate the rule, that it is necessary to alter this position of the head by manual aid, to enable it to be expelled. In making these observations it must be recollected, that they are directed against rules of practice which are intended as guides to the inexperienced practitioner; in combating them, therefore, I must not be understood to assert, that practitioners of much experience and acquired tact will occasionally have it in their power to effect with impunity, if not with benefit, this change of position, which writers direct all to do under every circumstance. Such cases can only be considered as exceptions, in which the practitioner, possessing an intimate knowledge of the position of the head, and the exact proportion which it bears to the pelvis, infers that there is not sufficient space to have it so expelled.

There is, however, one exception to this rule of non-interference, viz. the case described as "too early a separation of the chin from the chest of the child," or in other words, that in which the rotation, which has been described, round the transverse axis of the fœtal head, brings the forehead too low down in the pelvis, by which the head becomes fixed with the occipito-frontal measurement nearly corresponding with the bis-ischiatic or transverse measurement of the pelvic cavity. This exception can be always easily detected, not only from the extreme distinctness of the anterior fontanelle and its central position, but also from the immobility of the head, notwithstanding that the finger can be passed along its pubic side with facility, and there seems sufficient space for its advance. This accident usually occurs in a wide pelvis, and in some instances nature will herself remedy the error; the forehead will continue to descend, and change the head from the longitudinal axis to a line passing from the superciliary ridge to the bregma, an oblique measure

ment similar to the occipito-bregmatic, but taken in the opposite direction. The forehead is, therefore, first expelled in the same way as the occiput in ordinary cases, the tumour will be found on the forehead, and the passage of the perinæum more difficult than usual, nevertheless the head will generally be safely delivered. But if this deviation be discovered previously to the descent of the forehead, or when the head is fixed in its occipito-frontal axis, the correction is so easy by resisting its descent, or pressing upwards the frontal bone, and thus allowing the occiput to assume its natural position, that it would be injudicious, if not unwarrantable, to expose the patient to a needless hazard or long continued suffering by hesitation. As to the propriety of interference, such a case, therefore, must be considered an exception to the principle stated.

The remarks that have been made in reference to fronto-cotyloid presentations apply equally to face presentations; they do not necessarily increase the duration of labour, nor is assistance required.

The proportion in which they are met with is nearly as follows:

	Total Cases.	Face presented.	Being
Boivin, ...	20,517	74	1 in 277
La Chapelle, . . .	22,243	101	1 in 220
Collins, ...	16,654	33	1 in 504

The French Reports give no returns as to the duration of labour or the mortality; but according to Dr. Collins the duration of labour was—

"Under 12 hours, ...	31 cases.
„ 24 „	1 „
„ 36 „	1 „
Total, . . .	33

"Four of the thirty-three were still-born; with the first the labour lasted thirty-six hours; the second was an acephalous

fœtus; with the third the labour lasted eight hours; and with the fourth seven hours. All were delivered without assistance."*

So little difference do such presentations make in retarding labour, that Dr. Collins further adds: "Some cases of face presentation, I am disposed to think, were not noted, delivery having taken place *so very speedily*, as to excite little attention, and caused it to be overlooked."—p. 34. In fact, such presentation usually occurs in a pelvis sufficiently wide for their expulsion, and though no doubt exceptions may arise in which assistance is required from slight disproportion, they must be extremely rare.

The descent of the hand or arm with the head is also the consequence of a roomy pelvis; it is sometimes an unnecessary cause of impaction of the head, and when the head is thus arrested, it is of course required that we should endeavour to correct the deviation, and keep back the hand, having dislodged it with the head from its position during the interval of the pains; but if it be detected before the head has entered the cavity of the pelvis, or if it does not interfere with the progress of the head, I am inclined to question the propriety of meddling with it. In the latter instance, because no injury can arise until it meets the perinæum, when by ordinary caution, and a very simple management, any accident may be prevented. In the former, making attempts thus early to push the hand back is not likely to be effectual, while there is a risk that the head may be pushed too much *on the brim*, so that the uterus will begin to act more upon the arm than before, and thus gradually convert it into an arm presentation.

With these observations on the deviations which may occur in the presentation though the pelvis be regular, I shall conclude the present paper, reserving the consideration of the deviation in the pelvis to some future opportunity. From what has been stated it would appear, that, with the exceptions already mentioned, manual interference is not necessary to correct these

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* Collins, p. 33.

deviations, nor is the labour rendered tedious in consequence of their existence.

ART. IV.—*On the Means of distinguishing real from apparent Enlargement of the Eyeball, in Cases of Hydrophthalmia and Exophthalmia.* By JAMES O'BEIRNE, M. D., Surgeon Extraordinary to the Queen, one of the Surgeons of the Richmond Surgical Hospital, Dublin, &c.

AMONGST the observations appended to the case of General Hydrophthalmia, published in the Number of this Journal for May last, it was my intention to have inserted some on the subject of this communication. I was particularly anxious to do so, in consequence of one of my colleagues in the Richmond Hospital having expressed an opinion, that the case in question was one of protrusion, not enlargement, of the eyeball —an opinion which I combated at the moment; and, subsequently, in my clinical lecture on the case; by pointing out certain diagnostic marks, which, I am strongly disposed to believe, have been overlooked by all writers on diseases of the eye. Yet, strange to say, it will be found, on referring to my published observations, that I have altogether omitted to touch on the subject which I was so anxious to treat. How such an omission occurred, I am now quite unable to say. Be that as it may, shortly after the publication of the case, I received a letter from my friend Mr. Guthrie, of London, expressing doubts of its nature; and some weeks afterwards, another from Mr. Middlemore, of Birmingham, requesting to be informed whether I could have mistaken protrusion for enlargement of the eyeball. These communications, of course, instantly reminded me of my omission, and its consequences; but I cannot regret an oversight which has, at once, procured for me the opinions of such distinguished men, and afforded me an opportunity of treating an interesting point of practice at more length, and in a distinct article. Suffice it then to say, that my reply to

Mr. Middlemore's query may be collected from the following exposition of the point in question.

In the natural state, by far the greatest portion of the globe of the eye lies imbedded in the orbit, and hidden behind the folds of the conjunctiva. We cannot, therefore, see the whole diameter or size, or more than a small segment, of this globe. Accordingly, when one eye is protruded by any newly formed solid or fluid body or bodies, situated in the back part of the orbit, it *appears* considerably larger than the other, although both are really of the same size. Such being the state of the facts, how are we to distinguish between cases of hydrophthalmia and others of exophthalmia, in both of which there is protrusion, and either real or apparent enlargement of the eyeball?

In order to try this question fairly, let us consider, first, protrusion as a circumstance common to both cases. In hydrophthalmia, the eyeball is protruded by its own enlargement, and fills the orbit so as to render it impossible to ascertain by the touch whether the latter is occupied, or not, by any unusual solid or fluid body. In exophthalmia, the touch, the state and appearance of the parts, and the history of the case, may often enable us to detect an enlarged lachrymal gland, an abscess, fatty tumours, serous cysts, exostoses, and sanguineous or serous effusions, when situated immediately behind the conjunctiva; but none of these means will enable us to ascertain the presence of these or other morbid degenerations more deeply seated in the orbit. Again, with respect to the next feature common to both diseases, the *appearance* comes so exceedingly near to the *reality* of enlargement of the eyeball, as to make the distinction between them one of too great nicety to be decided by the eye of even the most acute and clear-sighted observer; and hence arises the frequent diversity of opinions on the point. Neither can measurement by callipers give any idea whatever of the relative size of the affected and the unaffected eye; for, although we may thus measure the former, we cannot measure the latter, in consequence of its greatest diameter being situated so deeply, and covered by the folds of the conjunctiva.

Such are our present means of distinguishing *real* from *apparent* enlargement of the eyeball; and it must be confessed, that they are very imperfect and inadequate for the purpose. But I shall now direct attention to means which will enable us to determine the point, at a mere glance, and with great certainty. Before I do so, however, I cannot avoid expressing my surprize, that it should be left to me to point out such obvious, simple, and strongly diagnostic marks.

I have seen a great number of cases of exophthalmia, and, in all of them, without distinction of causes, the upper eyelid covered the eye, and hung down lower than usual, was more or less paralytic and puffed, and its surface was generally of a dusky red colour, and traversed by several enlarged veins. Such was the state of this appendage in the case of exophthalmia from an enlarged and scirrhous lachrymal gland extirpated by Mr. Travers, who gives a coloured engraving which accurately expresses the state which I describe.* Such also was the state of the upper eyelid in two subsequent cases of a similar kind in which the lachrymal gland was extirpated, one by the late Professor Todd, and the other by myself;† and the same may be said of two cases admitted within the last three months into the Richmond Hospital, under the care of my friend Mr. Adams; one of which was an instance of exophthalmia caused by an enlarged lachrymal gland, and the other an example of fungoid disease of the brain extending into the orbit and protruding the eye. I should state, however, that, after very considerable research on the subject, every author whose works I have examined, with the exception of Mr. Travers, has neglected to notice this state of the upper eyelid: yet this circumstance does not in the least weaken my confidence in the correctness of my observation. But I must now turn to the state of the same appendage in cases of real enlargement of the eyeball. I have seen some cases of

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* A Synopsis of Diseases of the Eye, p. 233—Plate 2, fig. 6.

† Dublin Hospital Reports, vol. iii. Mine is the second instance on record of the performance of this operation, and the only one in which vision was restored.

hydrophthalmia, but a much greater number of large spherical staphyloma; and have invariably observed, first, that the eye was remarkably uncovered, and presented a staring appearance; secondly, that the upper eyelid was merely pushed upwards, and retained in that position, but unchanged in all other respects. That such was the state of these parts, in my recently published case of General Hydrophthalmia, will be shown by the following passage in the account of it, viz. "The eyelids are neither œdematous nor inflamed, [I ought to have added, nor paralytic,] and leave the eye perfectly uncovered."

Having now before us a full view, first, of the imperfections of all our present means of diagnosis in such cases; secondly, of the striking contrast which some of the symptoms and physical signs of the two diseases present, it is obvious that the following are the only certain means of distinguishing real from apparent enlargement of the eyeball, viz.—

In hydrophthalmia, the eye is completely uncovered; in exophthalmia it is more covered than usual.

In the former, the upper eyelid is pushed upwards, but unchanged in all other respects; in the latter, it hangs lower than usual, is more or less paralytic and puffed, and its surface is of a dusky red colour, and traversed by several enlarged veins.

ART. V.—*Statement of the Medical Effects of the Liquor Hydriodatis Arsenici et Hydrargyri.* By M. DONOVAN, ESQ.

Some months since, I inserted in this Journal a communication relative to the nature and composition of a new chemical compound, consisting of iodine, arsenic, and mercury; and I offered some suggestions on the diseases in the cure of which it might be found useful. These were psoriasis, lepra, and lupus.

Abundant trials, made by some of the most eminent members of the medical and surgical professions in this country, have proved, that these anticipations were not unfounded. The prac-

titioners of Dublin, who employed the remedy, have politely handed over to me the result of their experience, and I do not think I should discharge my duty, if I did not lay their statements before the Profession generally; with the view of drawing attention to a medicine, from the use of which, much benefit may arise to those afflicted with those dreadful and intractable diseases.

The first communication I received was from Richard Carmichael, Esq.

"Rutland-square, June 29, 1840.

"My dear Sir,

"I have tried the liquor hydriodatis arsenici et hydrargyri, in five or six cases of lupus, and in one case of psoriasis, with decided benefit in all.

"In one case of lupus, of ten years' standing, in which great deformity had been occasioned by the disease on the features of a young lady, on whom all the usual remedies had been tried, it produced most decided benefit, and seemed to put an immediate check to the progress of the malady. She is not yet perfectly well, but sufficient advantages have ensued to promise recovery.

"In one of my lectures, reported in No. 61 of the Dublin Medical Press,* I stated the case of a man who had lost a great part of the vomer, and in whom much deformity had consequently ensued from an obstinate attack of lupus, who in the course of a few weeks so far recovered, as to be discharged from the hospital apparently well. I perceive there has been no relapse of the disease, as he was told to return to the hospital should any suspicious symptoms make their appearance.

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* The passage in the Medical Press is as follows:—"The instance in which it has been tried is at present in the hospital, a case of lupus, engaging the nose and palate, of many years' standing, and which has destroyed the greater part of the nose. He has been using the remedy but four weeks, and a most decisive change has taken place for the better; so much as to have surprised my confreres of this hospital on the last consultation day."

" In another case, of a respectable shopkeeper, in ——— street, in whom the nose was affected, and not only the turbinated bones but the vomer had exfoliated, a perfect recovery took place after a three months' perseverance in the remedy, during which he was not prevented from attending to his usual occupation.

" In the case of Mr. ——, affected with psoriasis, although the disease had existed for years, most decided benefit generally followed the use of the preparation in question, so that nothing but discoloration of the skin remains, where scaly spots were formerly manifest. Some other instances of psoriasis and lepra also occurred, in which benefit followed its use, but we are still trying it, in similar cases to those I have detailed, in the Richmond Hospital, and you shall know in due time the result.

" Believe me to be, yours faithfully,

" Richard Carmichael.

" *M. Donovan, Esq.*,
11, *Clare-street.*"

The next communication was from Abraham Colles, Esq. M.D., to whom it occurred to try the effects of this medicine in some hopeless cases of scrofulous ulceration, and even in these some benefit was derived. Mr. Colles writes as follows:

" Stephen's-green.

" Dear Sir,

" I have tried your remedy in two cases only, these were extreme cases of scrofulous ulceration in adults; in both of these some amendment was produced, but no prospect of curing them; indeed it would require a *pene divinum remedium* to cure either of them. In one of these the medicine produced a slight degree of ptyalism.

" Yours, dear Sir, very truly,

" A. Colles.

" *M. Donovan, Esq.*,
11, *Clare-street.*"

The next was from Dr. Croker, who ascertained, by a very striking experiment, that the arsenical compound might be used with excellent effect externally, as an adjuvant to its internal exhibition. Dr. Croker's letter is as follows:

Merrion-square, July 1, 1840.

"My dear Sir,

"I have great pleasure in sending you the boy's case you asked for.

"Bernard Delany, (about 8 years old,) living at Irishtown, was affected with psoriasis guttata, particularly of the upper extremities.

"I first saw him at the Pitt-street Institution for Diseases of Children, and thinking him a fit case for your remedy of the liquor hydriodatis arsenici et hydrargyri. I sent his mother to get the medicine from you on the 9th of last February. He got ℥ii. of the liquor, in an eight ounce mixture, and took ℥iss. of that mixture night and morning. This mixture was repeated March 21st, and again on April 22nd. With your concurrence I tried the use of a lotion (equal parts of the liquor and water) on *one arm* for experiment, and the more rapid improvement of that arm was quite apparent. Soon after, the boy's father caught fever, and the treatment was discontinued; yet the previous use of the remedy had been so efficacious, that when we last saw him we pronounced him cured.

"I forgot to mention, the boy took no medicine during the treatment, but two or three doses of castor oil for pain of head and stomach, which he had been long before subject to.

"Believe me, my dear Sir,

"Yours faithfully,

"C. P. Croker.

"*M. Donovan, Esq.*,
11, *Clare-street.*"

The next statement handed to me was from Dr. Graves,

who used the remedy in a very striking and inveterate case at Sir Patrick Dun's Hospital. The following is his letter:

"29th July, 1840.

"My dear Mr. Donovan,

"In compliance with your wish, I send you a few remarks on the case of psoriasis, in which your new triple salt of mercury, arsenic, and iodine was tried last winter. Mary Cullen, a married woman, aged 60, had been affected with psoriasis for fifteen years; the disease, at first mild and confined to a few parts of her body, gradually extended over almost the whole surface of her skin; and when she was admitted into Sir Patrick Dun's Hospital, it presented all the marks of a most inveterate affection. On the tenth of November she commenced the arsenical compound, taking daily three draughts, each containing half a drachm of the liquor. After some days the medicine was discontinued, as it disagreed with both the stomach and head, but it was shortly afterwards resumed in smaller doses; and when the patient's constitution had become accustomed to it,* the dose was gradually augmented, and finally she took half a drachm of the liquor four times a day for about two months, with the exception of two weeks, (at different periods,) during which the above-mentioned symptoms caused its exhibition to be intermitted. The effects of the remedy exceeded my most sanguine expectations, for it caused an almost total disappearance of the cutaneous eruption; it is true, that after the medicine had been for a short time discontinued, the eruption again began to increase, and consequently we were once more compelled to resume the use of the arsenical compound. Unfortunately my period for superintending the clinical wards of Sir Patrick Dun's Hospital expired shortly

* The first few doses I have often found to disagree; but as in the case of tartar emetic, a state of tolerance is soon induced, and then even drachm doses will be endured.—M. D.

afterwards, so that the experiment was left incomplete; it had, however, lasted long enough to leave no doubt in my mind as to your remedy being a powerful agent, of most useful application in chronic diseases of the skin.

"I have the honour to be,

"My dear Mr. Donovan, very sincerely yours,

"Robert J. Graves.

"*To M. Donovan, Esq.*,
11, *Clare-street.*"

Dr. Irvine's case is important on account of the virulence of the disease described, its obstinacy and resistance to the usual treatment, and its rapid disappearance, commencing almost immediately after the patient had been put under the influence of the arsenical compound. It is further worthy of remark, that Dr. Irvine's experience in the Maison de Santé, induced him to doubt the efficacy of the ingredients of the liquor hydriodatis arsenici et hydrargyri separately exhibited, although in combination they effected a cure in his hands. His letter is as follows:—

"Dear Sir,

"With reference to the case of Mr. ———, whom you saw with me in the course of last winter, I subjoin the following short history.

"In the beginning of November I first saw him; he told me he had got an eruption over his skin, which made its appearance about a month previously.

"On examination I found his legs and arms thickly covered with large spots of psoriasis, much inflamed and very itchy. He said they were increasing rapidly in number, and that some had made their appearance on his body and forehead during the last few days.

"I directed that he should be blooded to twelve ounces,

and ordered him some aperient medicine which he was to continue for a week. These means afforded him some relief; the eruption was less itchy and less inflamed. I directed him to continue the aperient medicine, and to take twelve drops of liquor potassæ three times daily.

" It would be tedious to relate the entire history of this case, it is sufficient to say, that he took various remedies, Dulcamara and Plummers' pill among the number, without any benefit, unless temporary relief from itching.

" From the experience of many cases which I had treated without permanent benefit at the Maison de Santé, with Fowler's solution of arsenic, iodine, and mercury, separately administered, I was inclined to doubt their efficacy; I therefore determined to try the compound of these three, which you, in conversation with me about this time, had mentioned. My patient had now been upwards of three months under treatment, and to say the truth was little the better of all the medicine he had taken. He was most anxious to try any thing I could recommend, and this anxiety was most fully participated in by his wife, who had now been banished upwards of four months *de thoro marito.* On the 11th of February we commenced the solution, on which day I gave you an opportunity of seeing this gentleman, and examining his skin, in order that no doubt might exist as to the extent the disease had acquired.

" He took a draught containing 3ss. of liquor hydriodatis arsenici et hydrargyri three times a day from this date to the 28th April. Twice during that period I found it necessary to stop the medicine for two or three days, and to give an opening draught, from his having complained of headach and sickness of stomach.

" On the 28th of April you again examined him, and the disease was quite cured, nothing remaining but a stained appearance of the skin. It appears then that during the period mentioned he took 114 draughts: the total quantity of the

liquor taken was seven ounces and one drachm; and when we calculate the quantity of white arsenic contained in all, we shall find it to be about seven grains, with fourteen of protoxide of mercury, and forty-four of iodine acidified.

"I may add, that before writing you this note, I communicated with Mr. ———, who is now residing in the country, he says he is quite free from the disease, two stains only remaining on his legs.

"*To M. Donovan, Esq.*,
11, *Clare-street.*"

Mr. Cusack states a new and different application of the arsenico-mercurial compound, which he employed with considerable success. He found that venereal eruptions rapidly yielded to scruple or half drachm doses three times a day, that is to *one quarter of a grain* of protoxide of mercury, and one-eighth of a grain of arsenic, or thereabouts, in the twenty-four hours. This indeed is a very small quantity of mercury to effect a rapid cure with: no one will deny, that the less of it that will answer the purpose the better for the patient: and here again we perceive the effect of chemical combination, assisted no doubt by solubility. Mr. Cusack writes:—

"July 31, 1840.

"My dear Sir,

"I have unfortunately omitted to make notes of the cases in which your valuable remedy, the liquor hydriodatis arsenici et hydrargyri, was administered, and am only able to state generally that I have used it freely in secondary venereal eruptions, both papular and scaly. I found the eruptions yield rapidly to its administration in the dose of one scruple to two, three times each day. In two instances the mouth became tender, and a slight salivation followed: but in no case have I observed any unpleasant consequence, even when taken in larger doses.

"I am so satisfied with the results so far, that I intend giving it a further trial.

"Believe me, my dear Sir,

"Yours very faithfully,

"J. W. Cusack.

"*To M. Donovan, Esq.*,
11, *Clare-street.*"

The last case I have received is from Sir Henry Marsh; it is reported by T. C. Burton, Esq., M. D., at Steevens's Hospital.

"James O'Brien, æt. 12, admitted September 14th, 1839, into Steevens's Hospital, under Sir Henry Marsh, labouring under a disease having the character of impetigo figurata, of strumous origin, covering the face, chest, arms, and thighs; but particularly well marked at the flexures of all the joints. Has been subject for many years to chronic bronchitis, with severe paroxysms of asthma. Curative means were employed, attended with more or less success; but whenever a mitigation of the cutaneous affection occurred, the cough and asthma returned with violence. Means having been employed to alleviate the bronchitic affection, Sir H. Marsh considered this to be a suitable case for an impartial trial of the solution of arsenic, mercury, and iodine, (brought before the Profession and prepared by Mr. Donovan,) with a view to the removal of the skin affection. The dose administered was fifteen minims twice a day, increased gradually to one scruple, and finally given in half drachms. This mode of treatment was cautiously pursued for somewhat less than a month, with a gradual amendment of the cutaneous disease, which entirely disappeared without aggravation, but rather amendment of the bronchial irritation. After a short stay in hospital, the disease reappeared with all its former characters, and again yielded to the same treatment. It reappeared a third time, and the remedy was exhibited in larger doses, and steadily increased until the patient was taking half an ounce of the preparation during the twenty-four hours, in divided doses. Its use was now attended with very mild insalivation, as well as

gradual and total disappearance of all the symptoms both cutaneous and pulmonary. After remaining a short time in hospital he was recommended to go to the country, and left hospital very much improved in his general health.

"A portrait of this boy has been very accurately taken, in which the appearances of the disease are very distinctly traced: it is in the Museum of Steevens's Hospital."

CONCLUSION.

In several of the reported cases, it may be observed that slight ptyalism was induced. This is not to be wondered at, when it is recollected that the mercury is exhibited in solution; and that arsenic itself is capable of acting on the mouth. Of the latter fact an instance has been lately recorded.

I hope the Profession will favour me with other statements, according as the effects of this medicine become more known. They shall be published from time to time. And as the employment of various processes might lead to dangerous consequences, I entreat medical men to be certain that the formula I have given shall be rigidly followed in its preparation. It would be a pity that the character of the remedy should suffer through any error in its mode of production. The test of its perfection is, that the *whole* of the iodine, arsenic, and mercury shall disappear, and be dissolved during the process of preparing it. This cannot happen unless the three elements employed had been *chemically pure*, and unless the trituration had been sufficiently long continued. The colour, in a short time after the liquor is prepared, should be golden yellow, and the specific gravity 1.02. I have known one instance in which this medicine had been attempted to be produced by substituting common white arsenic of commerce, in place of resublimed metallic arsenic: it is almost needless to observe, that the former substance could not answer the purpose. If any sediment remains undissolved after the boiling, part of it will be arsenic, and where so small a total quantity is made use of, not a particle can be spared to go to waste.

BIBLIOGRAPHIC NOTICES.

On the Treatment of Varicose Veins. By M. Bonnet, Chief Surgeon to the Hotel Dieu at Lyons.

Notwithstanding all that has been written and said on the subject of varicose veins, very little that is satisfactory has as yet been introduced into practice which tends safely to a radical cure; palliative measures have been generally the resource of the cautious surgeon, and many of the bolder order have had reason to regret the consequences accruing from thóse apparently trivial operations, when the death of their patient has resulted from their speculative interference.

Undoubtedly instances are to be found, in which the knife, caustic, or ligature applied in the roughest and most uncouth manner, have been the means of accomplishing a cure, at least a temporary one, but the doubtful nature of success when attained, and its rarity, have been causes, and very sufficient ones, why the greater number of surgeons in this city (Dublin) prefer the palliative methods of treatment to any which have as yet been put forward.

We were led to the consideration of this subject by meeting with a treatise by M. Bonnet, chief Surgeon to the Hotel Dieu at Lyons, under the above title.

M. Bonnet having found that a large number of cases which had been treated by pins, after having remained cured during a period varying from one month to six, became again affected with varices in as great a degree of intensity as before the operation, and this occurred not only in the secondary divisions, but even in the trunk of the saphena where the greatest number of pins had been applied, and where obliteration appeared permanent, naturally lost confidence in this operation. Two patients, on the contrary, treated with caustic potass were more fortunate; their varices had not recurred in one in fourteen months, and in the other in many years after the treatment had been practised.

But if the potass had the advantage of producing a permanent cure, it had the disadvantage of causing troublesome hæmorrhages, an accident which never results from the application of pins. Induced to resign both of those methods taken separately M. Bonnet determined to associate them together, and thus resolve each difficulty: his theory was this; when pins are placed from distance to distance on the course of the saphena, and when cautery is applied by means of the potass in their intervals, then a permanent obliteration will be obtained by the pins, and the danger of hæmorrhage from the caustic will be done away with. This plan was tried on nine patients, but no positive results obtained, M. Bonnet not having seen them afterwards. Having lost confidence in the use of pins, twelve patients were then operated upon with potass alone, and this series of observations confirmed M. Bonnet more and more that the treatment of varices by this alkali was the only one of all the means he had employed which afforded a simple, certain, and durable cure.

The rules for the application of the potass are as follows:

1st. Many portions of caustic must be applied on the course of the dilated vein at intervals of two or three inches.

2nd. The application should not be made except in those parts of the veins which correspond to the muscles. The only places where it should be applied are on the superior half of the leg, and inferior half of the thigh.

3rd. The caustic must be applied at least twice at the same point, in order to reach the vein. This supposes that it is necessary, in order to obliterate the veins, to reach and open them with the caustic. In no case after the first application which only destroys the skin and a little cellular tissue, has the flow of the blood been found to have ceased in the veins, and they never are found converted into a hard cord impermeable to the blood. It is only after being opened that these changes occur. M. Bonnet leaves it a matter of discussion whether it would be preferable to open the veins by a single application of a sufficiently large piece of potassa fusa, or by applying a second portion in the centre of the eschar formed by the first.

The danger arising from phlebitis naturally presents itself as likely, both by theory and analogy, to arise from this operation; facts, however, speak differently since of twenty patients fourteen of whom were treated with the potass alone, and six by the combination of potass and pins, M. Bonnet has not even once seen a tendency in the inflammation to propagate itself along the course of the veins, although three or four applications of

potass had been made on different parts of their course, and in the greater number had opened their cavity; the inflammation was, therefore, in all these cases, limited by the bonds of adhesion, and perfectly circumscribed.

These results prove that cauterizing of the veins with caustic potass does not expose the patient to the danger of phlebitis; "and," says M. Bonnet, "finding every day proofs of the innocence of this remedy, I now take no other precaution than that of confining my patients to bed." They are permitted to follow their accustomed regimen, to have the half or three-quarter portion, (equal to the middle diet of our hospitals.) The dresser of the ward applies the caustic on their veins as if inserting a common issue, so that they never suspect that an operation is performing. Finally, the inflammation developed around each eschar, and the ulceration which succeeds its separation, are similar in every way to those circumscribed inflammations and ulcerations which occur when issues are established in the thigh or leg, only that the inflammation is more acute, and the ulceration deeper, on account of two portions of caustic being applied in the former case. M. Bonnet allows, however, that where two cauterizations have been performed too close to one another the areola of inflammation which surrounds them may unite and cause a genuine phlegmon.

The sole inconvenience from this treatment is, that it may cause hæmorrhage, which was the reason why M. Bonnet combined its use with the application of pin ligatures; but he has found that lying quiet in bed, and gentle compression, is sufficient usually to restrain the flow of blood. The period which the patient ought to spend in bed, in order to avoid all risk of hæmorrhage, cannot be precisely laid down; as soon after the second application of the caustic, and the opening of the vein, the blood above and below the perforated part has become coagulated, the vessel becomes hard, pressure on the contents of the vessel no longer causes undulation. When these signs appear, indicating the obliteration of the vessel, any one may feel convinced that the danger is past, and every chance of hæmorrhage dissipated. Four or five days are ordinarily sufficient for the accomplishment of this phenomenon. It is necessary to second the effects of rest by placing a roller round the limb immediately after the second application of the caustic.

The results obtained by this method were twenty-one cases of perfect cure: only in two cases was there hæmorrhage sufficiently abundant to cause alarm, if the patient had not received prompt assistance; those two persons had got up a very short time after the second cauterization, and one of them had detached with a pin the clots which began to form at the bottom

of the eschar; their imprudence, however, only caused a very considerable flow of blood.

M. Bonuet remarks, that those varices which form on the internal saphena and its divisions, and which affect persons of less than 60 years of age, can be *completely* and *permanently* cured by the application of the caustic potass. On the contrary, when both internal and external saphenic veins are affected, and simultaneously dilated, that no attempt at cure should be made. In the two only cases in which the surgeon of Lyons employed caustic with patients in whom both veins were varicose, he observed, that whilst the internal saphena became obliterated, the external acquired a more considerable volume; and its varices, which were slight before, became larger, so as to substitute a new disease for the one which had been cured.

Amongst the circumstances unfavourable to the operation, are mentioned great age in the patient, and thickness of the venous walls, to such an extent as to render it difficult to approach them to one another.

Besides what we have mentioned, the paper of M. Bonnet contains a description of varicose tumours analogous to spontaneous aneurisms, the phenomena of which are very remarkable, and in which there is undulation of the blood when percussion is employed on the varicose veins; M. Davat's plan of treatment by pins is also touched upon; the conclusion is this, that the application of caustic potass, following the rules laid down by M. Bonnet, is, without contradiction, the most efficacious treatment which can be adopted for the cure of varices; it effects a cure which is more solid and durable than that produced by pins, or by pins and caustic combined, and as it is not more dangerous, the preference ought to be given to it.

It is well known, at least in the United Kingdom, that Mr. Brodie employed caustic for the destruction of varices many years ago, and that his practice was to make a slough which penetrated the skin and included the vein; but that practice he gave up for one, which after numerous trials he thought superior, that of passing a narrow bistoury between the skin and vein, with the blade flat to the vein, then turning it, and cutting through the vein as he drew it out. This plan, in his distinguished hands, succeeded better than the potass, and had the advantage of not giving so much pain, and not producing an ulcer of magnitude and difficult to heal, which the caustic always does.

S. L. L. B.

On the Arrangement of Hair on the human Body. By Professor Eschrict.

In Otto's "Dänische Zeitschrift," a most interesting communication has been made, from a treatise on the above subject by Professor Eschricht, the general results are as follows. The down and mucous glands are not produced at the same period upon the entire skin, and each does not possess villous properties at the same time. The eyebrows first make their appearance in the middle of the fifth month, at the same time with the beard around the mouth, which is stiff and regularly arranged. In the sixth month, the surface is covered with a tolerably stiff, close lying hair, covered with a manifest cuticle in beasts; this is easily distinguished from the milk hair. This horizontal layer occurs at the same time with the mucous follicles and hair secreting sacks, which latter lie, at the end of the sixth month, two and three together, like roof tiles placed spirally over one another. These become congregated together after the same manner as the villi of the chorion and intestinal canal in different parts, and thus establish in a different manner, in different sexes and individuals, a sort of opposition between the head, breast, and abdomen, &c.

The direction and division of the hair occurs, according to our author, in streams, which have, at the least, five points of commencement, on the scalp, the inner angles of the eyes, and the axillæ. The scalp stream begins with one, sometimes with two curls, turned towards the right, and generally falling away towards the left; it separates at the boundaries of the scalp into the streams on the forehead and temples. The brows are arms from the forehead and eye streams. This convergence of streams easily explains the different direction of the hairs in certain collections of hair, for whenever two streams become united into one, the hairs of each are directed away from those of the other, form crosses, as on the neck, &c. The stiff hairs at the entrance to mucous membranes, ciliæ, vibressæ &c. seem to form a peculiar and smaller system; they lie outside all those streams, and direct themselves in a diverging manner: for example, in the ear, both in and out, in the eye, as in trichiasis; in the mouth they might be taken for representatives of the teeth, for they are directed inwardly where the deep-lying teeth secreting sacs are placed. The top of the head may be esteemed the point of convergence of these streams; also the elbows, ulna, tibia, eyebrows, spine, and probably the navel, penis, and linea alba; that there is a certain degree of order in this arrangement cannot be denied.

S. L. L. B.

Essay on a new Method of diagnosticating in a certain Manner, the different Deformities of the Prostate, considered as ordinary Causes of Incontinence and Retention of Urine in Old Men. By M. Aug. Mercier.

The instrument employed by M. Mercier is very simple in its conformation; it is a sound, made straight to within six or eight lines of its termination, where it is curved at nearly a right angle. The shortness of this curved portion permits it, when once introduced into the bladder, to be rotated freely. The external extremity is provided with an oval or polygonal plate, perpendicular to the plane of the curved portion, which shews, by means of a mark on one of its faces, on what side the beak of the instrument may be when it is rotated.

This catheter can be passed with the greatest facility, particularly in old men, the canals of whose urethra are considerably enlarged from before backwards, in hypertrophy of the lateral lobes of the prostate, which, as Hunter has remarked, and M. Mercier confirmed, often extends to fourteen or fifteen lines; its introduction is at least as easy as those lithotriptic instruments which are acted on by percussion, having nearly the same curvature, and it is well known that they can be passed, only with the difference arising from their bulk, as easily as any curved catheter.

The only precaution necessary in introducing this instrument, is to push it forward, and at the same time lower the handle of the instrument as soon as the beak has entered the prostatic portion of the urethra, and thus carry it forward to the neck of the bladder; the combination of these two motions is essential, or otherwise the beak of the instrument will strike against the anterior wall of the urethra, and thus be prevented entering the bladder.

M. Mercier shows what are the changes in form in the prostate gland, which can be recognized by the aid of this instrument. He insists particularly on the alterations in the transverse portion, and in the lateral lobes. The general facts which he relates have been published before in the Bulletins de la Societe Anatomique, (1836, p. 12,) under the title, Recherches anatomique sur le Prostate des Veillards. The result of those researches proves, that hypertrophy of the prostate occurs sometimes at the right side of the neck of the bladder; sometimes at the neck of the bladder itself; sometimes towards the centre. In each of those cases M. Mercier gives the signs by which they

can be recognized and contra-distinguished, and even their different stages discovered.

In order to recognize those tumours which project into the bladder, it is requisite, as soon as the sound has penetrated within its neck, to take care that its direct position should be nearly parallel to the axis of the body then the beak can be drawn against the anterior part of the neck of the bladder, or to the right or left; thus it is easy to make it pass over all those parts by gently drawing it towards you whilst causing it to rotate. When the prostate on either side is normal, the beak passes over the whole of this part without experiencing any elevation. Further it descends a little when it is turned directly backwards, and this takes place in a remarkable degree when the lateral lobes are hypertrophied, and the middle healthy, a state which rarely occurs. But if a tumour exists at any point of the neck, the instrument is stopped, and it is necessary to permit it to ascend in proportion to the height of the eminence, in order to pass over the obstacle; then continuing the rotation and a very gentle withdrawal of the instrument, it descends again to the same level it had been at before. The plate attached to the end of the sound indicates at what part the beak is impeded; the arc of the circle described from the point where the sound begins to mount, till it re-descends to its former state, gives the size of the tumour, and the degree of its elevation may be judged by observing how many lines the instrument has ascended from the orifice of the glans penis. When these motions have been repeated sufficiently often, both to the right and left, we can then determine very closely—1st, the exact position of the tumour or tumours if there be many; 2nd, their elevation; 3rd, their bulk; 4th, from the manner in which the instrument mounts or descends, more or less rapidly, we may conjecture whether the protuberance is pediculated, or has a large base. With regard to the depth of these tumours, M. Mercier has never found it to exceed their breadth.

By means of these manœuvres it has been found easy to recognize tumours not larger than a pea; it is not, however, to be expected, that in all cases an accurate diagnosis can be obtained: such is impossible when the hypertrophied tissue is of slight consistence, when the existence of a protuberance can be discovered, but its size cannot be determined.

The hypertrophies which occur at the neck of the bladder, and which consist most often in the valvular development of the transverse portion, described by M. Mercier, are as easily recognized as the preceding. When this valvular projection is great, it is easy to feel it when the catheter is introduced into the bladder, for at the very moment when the point of the instrument

carried straight forward, is passing the neck, a sudden rough motion is felt, by which it is carried nearer to the symphisis pubis. Should this valve be but slightly developed, the beak of the instrument should be turned downwards, and it then can be drawn out of the neck of the bladder; and when this is healthy it will pass through it very easily; whilst on the other hand, should this valvular projection exist, the instrument will not pass except with more or less of difficulty on account of its beak lodging itself in the *cul de sac* formed above by the valve, and the posterior wall of the urethra below: this will be sufficient evidence of the existence of the transverse tumour, which it will be necessary for it to pass over.

The hypertrophies which project into the prostatic portion of the urethra, are situated on the internal aspect of the lateral lobes. Thus the canal has, in reality, but two lateral walls, united before and behind; if a section of it be made perpendicular to its axis it would represent a curved line, the concavity of which would embrace the tumour, and the extremities remain in the mesial line. Thus when a sound is introducing into the bladder, as soon as its beak has arrived at the summit of the projection, it will incline to the opposite side, and this inclination will indicate the existence and seat of the disease. There will be little or no deviation when the extremity of the sound passes close to the anterior or posterior angles of the canal. In order to remedy this cause of error, M. Mercier recommends, in withdrawing the catheter from the bladder whilst it is in the prostatic portion, to press gently from above on the root of the penis near the symphysis pubis, so as to lodge its convexity against the posterior wall of the canal; the operator then draws the instrument towards him, taking care not to distance it far from the axis of the trunk, or to elevate it towards the abdomen; as in ordinary catheterism the necessary result of this is, that when the beak passes to the summit of the projection of the lateral lobe, it then inclines to the opposite side. The plate externally indicates this motion and the reason of it.

It is necessary frequently to repeat this examination when the first attempt does not succeed, by giving different degrees of inclination to the catheter in the straight position with regard to the axis of the body.

When there is equal hypertrophy of the lateral lobes, the catheter, when drawn more or less parallel to the axis of the body, will pass over the prostatic portion without inclining to one side or the other. The facility with which the instrument passes in this case, shews that the canal is increased from before backwards, and in consequence, that the lateral lobes are increased in volume in the same direction. In this case exami-

nation by the rectum will furnish some useful hints. The value of this method of examination remains to be proved in those cases where the hypertrophied prostate is softened or fungous; in those in which the tumours are of the same consistence as the gland itself, or where there is a stalk or pedicle: but those points which at present furnish subjects for discussion, can only be decided by actual experiment.

S. L. L. B.

A practical Work on Diseases of the Eye, and their Treatment, &c. By Frederick Tyrrell, Esq., &c. &c. 2 vols.

There are two periods of professional life when a medical man may advantageously engage in authorship. During the early years of practice, when he is "making up" his information from the labours of others, tested by hospital experience, he may save much trouble to others, and earn a good name for himself, by collecting scattered facts, and collating diverse opinions, and publishing the result of his researches. This he has leisure for, and though not the highest kind of writing, it is what is most wanted at present. Then again at an advanced period of life, he may record for the benefit of others that experience which the confidence of the public has enabled him to acquire, and which is of great value to the Profession. Young men *may* become authors of the first class if they like, and they will find their advantage in so doing, but it is optional; but senior practitioners *ought* to publish the results of their experience. Such a record is due to the Profession, by whose help they attained their eminence, and to the public, by whose confidence they have been rewarded. It is also due to themselves, and to their station, to shew that they have not been indolent receivers of fees, but zealous and intelligent observers. Thus we conceive, that any *eminent* practitioner who leaves the world after a life spent in professional reputation, and rewarded by success, without giving to his brethren the information he has acquired, violates one part of his duty.

In this opinion we are happy in the support of so high an authority as Mr. Tyrrell, who states as one reason for publishing the valuable work under our notice—

> "A conviction, that it is a duty I owe to the Profession to put them in possession of the result of a long experience, in a most ample field for inquiry and observation. I have now been attached for more than twenty-two years to the Ophthalmic Hospital; and for the last twelve of them, have held the most responsible professional position in it."—(*Preface.*)

Ably has Mr. Tyrrell fulfilled his duty to the professional public, and we doubt not that the Profession will promptly acknowledge the obligation.

The work is written in a perspicuous style, and abounds in practical information. There is comparatively little notice of the literature of ophthalmology, which we regret; but for which Mr. T. gives what appears to him a sufficient reason.

The first volume opens with an introduction and remarks upon the diagnosis of diseases of the eye,—the mode of examining the eye, and the application of remedies. Then follows the anatomy of the conjunctiva, and its morbid states, such as simple, pustular, catarrhal, and purulent ophthalmia, &c. &c., pterygium, fræna, adipose tumours, and the cuticular condition of the conjunctiva, with a detail of injuries inflicted upon this membrane. Next comes the anatomy and morbid conditions of the cornea, of the sclerotic, of the aqueous membrane, of the iris, of two or more of the superficial tunics, diseases of the palpebræ, &c. &c.

The second volume treats of amaurosis; diseases of the choroid—of the retina—of the crystalline lens—of the orbit; with a detailed account of the various operations and modes of treatment.

A series of plates, illustrative of the various diseases, are given, with sufficient accuracy to be of great use.

We shall now quote some observations, that our readers may judge for themselves of the style of the work, merely premising that the rest will be found fully equal to what we extract.

No one can question the importance of a correct diagnosis in this class of diseases, although it may not be very easy to obtain; the following plan is recommended by Mr. Tyrrell, "as well calculated to elicit all important facts before the character of a local disease be decided on."

"First—obtain from the patient, or from those who may have the care of him, all the account they can give of the case; limiting their remarks to points of importance: by this means the origin, progress, and continuance of the disease, with the effect of previous treatment, will be ascertained, and the medical man will acquire a knowledge of what are termed the *subjective symptoms*—such as could be communicated without personal interviews.

"Secondly—make a careful examination of the affected part or organ, to ascertain the morbid changes it presents; the signs or symptoms thus obtained, are called *objective* (termed in the work, *appearances*) —as being principally collected by the aid of vision, though frequently much aided by touch, and occasionally by other senses.

"The acquisition of the subjective and objective symptoms, will usually enable the medical man to decide with tolerable certainty on

the nature of a local disease; and may perhaps also shew whether the disease be purely local or not; but in order to determine this point with certainty, it is further necessary to investigate the condition of the system, and of the most important organs and their functions. In the first place, then, the character of the local affection should be elicited; and secondly, it should be ascertained whether the morbid action be purely local, or if it be connected with general derangement or disturbance of any important function."—"Marked general disturbance, constituting fever, cannot fail to attract attention, and to influence the judicious practitioner in the treatment he may adopt for relief of the local disease.

"There are, however, other conditions of the system, which often materially influence local disease, and which may be, and often are, overlooked or disregarded; because they are productive of little suffering or inconvenience to the individual, or do not appear to affect the general health; I mean the conditions of plethora and debility evinced by opposite states of the vascular system principally.

"In the first, the circulating vessels are full and tense; and the pulse hard and incompressible: such a state now and then exists, without derangement of any principal function, and the patient seems in good health; he is, however, disposed to inflammatory disease; and local morbid action usually becomes very acute under such circumstances.

"In the second condition, there appears to be a deficiency of the circulating fluid, and the pulse is usually small, or loose, and easily compressible; this state may also exist, without any important functional disturbance, and the patient may consider himself in good health; but in case of local disease or injury, a salutary action cannot be established, during the continuance of such a state of the vascular system.

"These two conditions of plethora and debility, though immediately opposed to each other, have each the effect of augmenting local disturbance, and occasioning a train of symptoms and appearances, which in structures less favourably circumstanced than those of the eye, do not often present characters sufficiently decided, to enable the practitioner to determine upon the precise nature of the affection.

"In both instances, the local symptoms evinced are often those which are considered as indicating acute disease, or excess of action; and therefore, when regarded independent of the condition of the system, lead to the adoption of treatment which proves in many cases, not only useless but injurious."—pp. 26, 27, 28.

So much for the general means of diagnosis, in addition to which local examination of the organ has been mentioned: this is not always easy, and requires a good deal of tact in many cases. Let us hear the mode recommended by our author:

"When examining an eye, the subject of inflammation, the

patient should not be exposed to too great a body of light, nor to a bright or direct light, but only to such a degree of it, as may be sufficient to afford a correct view of the organ; and the patient should, if possible, be placed so as to receive the light obliquely upon the face. If an adult, either the reclining or recumbent position is best, as enabling the medical practitioner to look well beneath the superior palpebra. The patient should be directed to cover one eye with a handkerchief or with the hand, whilst the other undergoes an examination, which should be conducted in the following manner: the point of the fore-finger of one hand should be placed a little below the centre of the inferior palpebra, about the margin of the orbit; so that by pressing the integument downwards, and at the same time backwards or towards the maxillary bone, sufficient stress can be made on the skin to cause its depression of the lid, and slight cohesion; simultaneously the extremity of the thumb of the opposite hand should be placed near the centre of the superior palpebra, a little above the upper margin of the tarsus, between it and the eye-brow; so that little or no pressure be made on the globe itself, but so as to enable the examiner to raise the integument of the lid towards the brow, against which he may make firm pressure; and thus by acting upon the integument, he may raise the palpebra to a sufficient extent to obtain a satisfactory view of the eye without any violence to the globe. The finger and thumb of the two hands should act together to depress the lower and elevate the upper palpebra at the same time; and during the separation of the lids, the patient should be directed to look downwards, inwards, and outwards in succession, by which the whole of the cornea can be brought under observation."—p. 33.

Some slight modification of the above plan is required according as it is the right or left eye, and a different position is necessary with children.

We could easily multiply our extracts, but those we have given exhibit a fair specimen of the author's style; and we add our earnest recommendation to our readers, to procure and read through the two volumes, assuring them that they will be richly repaid for their trouble by the stores of practical information laid before them.

The Principles and Practice of Obstetric Medicine, &c. By James Blundell, M.D. Edited by Alexander C. Lee, Esq. and N. Rogers, Esq., M.D.

This work is something like "the play of Hamlet, with the character of Hamlet omitted by particular desire," being an edition of Dr. Blundell's "Obstetricy" depurated of Dr. Blundell's peculiarities; and although we confess that there is a "raciness" in his flights of fancy, and a quaintness in his illustrations, yet

we are inclined to prefer the present edition to the former one. Besides very much matter has been added in the present work, and many deficiencies supplied.

The work is divided into two principal sections:—

"The first, consisting of three parts, is merely obstetric in its character, and is consequently the most important; while the second, including the last two parts of the work, embraces the physiology and diseases (functioual and organic) of the female generative system, during the successive periods of female existence, and in all circumstances."

In fact this work embraces both the volume on "Obstetricy" and that on Diseases of Women, published by Dr. Blundell.

Some alterations have been made in the arrangement of the different sections, in order to follow as nearly as possible the natural order.

"The next feature to which the editors are desirous of drawing the attention of the Profession, is the introduction of nearly four hundred pages of additional matter from numerous valuable sources."

There can be no question of the value of this addition: we do not want so much the addition of new matter to our professional stores, as the assembling together of facts and opinions already promulgated. This the editors have done extensively, indeed rather too extensively; for example, there are twenty-eight pages of Dr. Montgomery's able work given in one extract. This is not borrowing, but stealing; however, if Dr. Montgomery does not object, it is not for us to cavil.

We have been thus particular in specifying the peculiar claims which this edition has upon the Profession, because our limits do not permit an extended notice.

The editors have spared no trouble, and the publisher no expense, and the work is highly creditable to both. If our recommendation be of any value, it is in favour of the book; but we think it is needless, for no library would be complete without Dr. Blundell. And the student gains so much information in addition to Dr. Blundell's lectures, that we are satisfied that this edition will have a very extensive cirulation.

The Medical Examiner. Edited by J. B. Biddle, M. D., M. Clymer, M. D., and W. W. Gerhard, M. D., Philadelphia.

This periodical promises to become a great ornament to the medical literature of America; and we shall from time to time

present our readers with extracts from the important original articles and selections with which it abounds. We have great pleasure in noticing the foundation of a Pathological Society in Philadelphia, in the transactions of which we find many most interesting communications, some of which will be found in the Scientific Intelligence of our present Number.

The new Philadelphia Journal is to be recommended for the high tone of feeling and dignity which is preserved throughout its pages. In this respect, however, it is only treading in the footsteps of the other American Journals.

In speaking of the experiments of Dr. Pennock on the motions and sounds of the heart, the full report of which we gladly transfer to our pages, the editors make the following observations:—

"The experiments of Dr. Pennock were conducted upon a scale of expense, and prosecuted with a degree of care, which require a pure devotion to science, possessed but by few individuals. It is not our practice nor our present purpose to write editorials in praise of the exertions of particular individuals, more especially when they are to be found in our own city, and amongst our own friends; but when a series of expensive and troublesome experiments has been completed, we are not only gratified, but, as it were, are obliged to add our testimony to the fidelity and disinterested care of the observers. Every precaution, we know from our own observation, was taken to avoid error; and when the result of an experiment seemed at all doubtful, it was repeated again and again until the apparent obscurity was fully removed.

"It will be perceived by a reference to the experiments, that besides confirming several points already set forth by the British experimenters, the experiments of Dr. Pennock have developed some new facts. These are the existence of an auricular sound, faint indeed, and to a great degree merged in that of the ventricles, but still real. Indeed, when the fact of real muscular contractions of the auricles is proven, we know from analogical reasoning, that sound, which is the necessary consequence of muscular contraction, must be produced. The active muscular contractions of the auricles has been doubted by some physiologists, we hardly know why, for the evident muscular fibres of the auricles are certainly designed for no other purpose than other muscles, that is, contraction. The experiments of Drs. Pennock and Moore have set this question also at rest, and proved satisfactorily to all present, that the muscular fibres of the auricles were in action during their systole.

"There are two other points ascertained positively by these observers, from direct experiment, which we believe were not noted in previous observations of the kind. These are—1st, that the ventricular sound on the right is much sharper and clearer than that of the left, which is more dull and prolonged; 2nd, that the second or valvular sound ceases by the congestion of the ventricles, ceasing first on

the right side. With both of these facts we have been long familiar, from our observations of sounds of the heart in the living body, both in the healthy and diseased condition of this organ; and it is not a little gratifying to us to find that the clinical observations which we have often made and pointed out to our pupils have been abundantly confirmed by the sure test of direct experiment. This observation throws light upon a large number of pathological facts, which are often with difficulty understood without knowing the effect of congestion upon the heart.

"The last point of interest which has been for the first time explicitly stated, is the less degree of loudness of the second sound over the pulmonary artery and valves than over the aorta. This probably arises from the pulmonary artery being so much weaker and thinner."

We cannot deny ourselves the gratification of inserting the following letter from one of the editors of this Journal to his colleagues.

"*Dublin, 20th June,* 1839.

"*To the Editors of the Medical Examiner.*

"GENTLEMEN,

"The high reputation of the Dublin medical schools and of their Professors, induces me to send you a few hasty observations respecting them, which I was enabled to make during a recent visit. Connected with the University is the

"*School of Anatomy, Trinity College,* a commodious building in the College Park, including the anatomical and chemical theatres. In the anatomical section there is a beautiful dissecting room, admirably lighted and ventilated, with a fountain and troughs in the centre. There is a private dissecting room also. The lecture room is sufficiently spacious to accommodate four hundred students; and here the anatomical, physiologial, pathological, and surgical lectures are delivered. The College museum is scanty. The students have the use of a good library, on the payment of a small sum. The lectures commence on the first Monday in November, and continue till the last of May.

"The *College of Physicians, Sir Patrick Dun's,* is similar in its objects to the same institution in London, and need not detain us.

"The *Royal College of Surgeons,* on the west side of Stephen's Green, is a fine building, with a Doric facade of mountain granite. The columns of Portland stone rest on a rustic basement, and support an elegant pediment, surmounted by three statutes—Esculapius, Minerva, and Hygeia. In the tympanum of the pediment are the royal arms. The interior is conveniently arranged, and contains a board room for the meetings of the College, a library, with a good selection of works on medicine, surgery, and natural history; an examination hall, and numerous smaller appartments. There are also four lecture rooms, a laboratory, and several dissecting rooms. There are *three*

museums. One is eighty-four feet long, by thirty broad, and thirty-six in height, with a gallery. This is appropriated to a large and well-arranged set of human and comparative anatomical preparations wet and dry. The second museum, twenty-four feet square, and thirty-six high, with a double gallery, contains the pathological specimens, and an excellent collection of wax models, the gift of the Duke of Northumberland. The other is small, in which are the models and specimens used in the daily demonstrations. The candidates for a surgical license are obliged to study five years, to attend a certain number of courses on anatomy, physiology, surgery, chemistry, practice of medicine, materia medica, midwifery, and medical jurisprudence. They are publicly examined for two separate days, very rigorously, on all these branches. If rejected, the candidate may appeal to another court of examiners, differently constituted; and if rejected by them, is obliged to extend his probation one year. Half yearly examinations of the registered pupils are held, and each candidate is obliged to show that he has answered four such, ere he can be eligible to the final one for his diploma. The lecture term embraces six months.

"Attached to the *House of Industry* in North Brunswick-street, an immense establishment, capable of accommodating nearly two thousand *inmates*, is the *Richmond Surgical Hospital*, containing one hundred and twenty beds. The patients are admitted by the surgeons according to the urgency of the case, without reference to recommendation. The building was an ancient nunnery, and is badly adapted to its present more useful purpose, the wards being low and small. Much attention appears, however, to be paid to cleanliness and ventilation, and considering the crowded state of the wards, with tolerable success. The operating theatre is of a good size, and well lighted. The museum, commenced by Professor Todd, of King's College, London, is indebted for its present prosperous condition to the indefatigable exertions of R. W. Smith, Esq., the accomplished Surgical Lecturer at the Richmond School. Although the collection cannot pretend to vie in extent with that of the College of Surgeons, it is far more valuable. It is comprised entirely of pathological specimens. The history of each case is known and registered; and there are casts and drawings of most of them, admirably executed by individuals retained exclusively for its use. Here I examined the preparations of congenital malformations of the shoulder-joint, the subject of a novel and excellent essay, by Mr. Smith, in the last number of the Dublin Journal. Also the specimens of rheumatic disease of the joints, so ably described in Todd's Cyclopædia, by R. Adams, Esq. of this city.

"The *Pathological Society of Dublin* promises to become a most valuable institution. Though recently established, so great has been the ardour and industry of its members, and so ample the materials, that a volume of transactions may very soon be expected. This will be illustrated by plates of the most important specimens. Each preparation has its history attached, with casts and drawings. No where in America does a more ample field exist for the establishment

of a society of this description than in Philadelphia; and were it once commenced, I have not the least doubt would become one of our most cherished and important institutions. Boston already has a society of the kind, and great advantages have been found to arise from it; and, under the care of its indefatigable curator, Dr. J. B. S. Jackson, will assume before long an importance commensurate with its usefulness.

"I this morning examined at Mr. Adams's, an undoubted specimen of united fracture of the neck of the femur within the capsule. This occurred in an old male pauper, in the House of Industry, some time since. Nothing was done, and on his dying after a few months, complete ossific union was found to have taken place. The case will be detailed in the forthcoming number of the Cyclopædia of Anatomy and Physiology, *Art.* Hip-joint, by Mr. A. It is not to be regarded as contradictory of Sir Astley Cooper's views as to the rareness of reunion in such cases. In 1834, Sir Astley addressed a note to the Editor of the Medical Gazette, with the view, as he stated, of correcting an assertion of the late Baron Dupuytren's, that he (Sir Astley) had declared reunion, in cases of fracture entirely within the capsule, to be impossible. He does not deny the possibility of union, but only regards it as rare. He considers the difficulty of a false position, and not deficient nourishment, to be the obstruction to union, and adds, that where the synovial membrane is unruptured, union will occur, giving as illustrative a case of Mr. Swan's. Mr. Adams's case is exactly like that of Mr. Swan's, the rupture of the sac being limited to one side, and in that spot there is no ossific deposit. The preparation and case are highly interesting.

Mr. Adams is one of the Surgeons to the Richmond Hospital, and an excellent practitioner and operator. He showed me the results of several operations for club-foot, which he had recently performed, and with success. The treatment of surgical cases is very similar to our own, though they appear to admit less readily than we do, new and unestablished methods of treatment. Davat's operation for varicose veins, and Velpeau's iodine injection in hydrocele, I could not discover had yet been tried in any of their surgical hospitals. Their fracture treatment is still defective. I have had no opportunities of witnessing any operations. The same neatness and excellent ventilation, and large wards, and comfortable beds, as with us, are not seen in most of the Dublin hospitals. Great attention, however, appears to be paid to the patients, and the manner of the visiting medical attendants is patient and kind.

"Very respectfully yours,

"M. C."

Commentatio de Tumoribus in Pelvi partum impedientibus. A gratioso Medicorum ordine Heidelbergense præmio ornata. Auct. B. R. Puchelt. Heidelbergæ, 1840.

In the work of the celebrated Professor of Midwifery of Heidelberg, on the malformations of the pelvis, he announced the

work now before us; and in the preface which he has written for the work of his pupil, he dwells strongly on the importance of studying the anatomy of those tumours which interfere with delivery, more particularly if they be of an osseous nature. For many years the Professor has turned his attention peculiarly to this subject, both in the closet and in his lectures. Being Dean of Faculty in 1837, he proposed it as the subject for the prize essay, and had the satisfaction to see the prize awarded to the son of his friend and colleague, Professor Puchelt.

The work is divided into two parts. In the first, are discussed those tumours which originate in the organs of generation; and in the second is given the history of tumours of the surrounding parts. The first series is divisible into tumours of the osseous tissue and of the softer structures; and in the second, are described those cases, in which organs from their unnatural growth, as the ovaries, rectum, and fallopian tubes, may cause an obstacle to delivery. On each of these varieties the author gives numerous facts, with reference to history, diagnosis, prognosis, and treatment.

First Part.

A.—*Tumours developed in the Osseous Structure.*

Chap. I.—*Exostosis.*—The author shows, that when the disease is extensive, the Cæsarean operation is almost always indicated.

II. *Osteatomatous Tumours.*—He confines this term to tumours formed of the osseous and lardaceous tissues, for those formed by fibrous tissue, and which do not adhere to the bones, but by tendinous or cellular fibres, are to be placed among the tumours developed in the cellular membrane of the pelvis. Two operations of osteosteamatous tumours are given, one by Stark, the other by Gummel of Weisbaden. This last observation was not before published. The Cæsarean operation was performed, and the child extracted alive, but the mother sunk on the following day. The tumour followed upon a fall on the pelvis, which occurred some years before.

B.—*Tumours of the Soft Parts.*

1. *In the Uterus.*

Chap. I.—*Sarcoma.*—Two cases are given where delivery was impeded by this tumour. In sarcoma, as well as steatoma, fibrous and scirrhous tumours, puncturing of the head, or the Cæsarean operation, are necessary, for the tumour can neither be extirpated nor depressed.

II. *Steatoma.*—In one case delivery was impeded. In three others the tumour, though in the uterus, was external to the pelvis.

III. *Scirrhus and Carcinoma.*—Out of thirty cases, in which delivery was impeded by this disease, twenty-six presented the disease in the superior segment of the uterus, and four at its fundus. Seven mothers died during their accouchement, and nine afterwards; ten recovered; and in three the result is not known. Fifteen children were born dead, ten lived, and the result in two is not known. In some of these cases, delivery takes place with great rapidity; but when it is prolonged, interference becomes necessary.

IV. *Cauliflower Excrescence of the Neck of the Uterus.*—Seven observations. The principal danger is from hæmorrhage. It is in general proper to allow natural delivery; and if the tumours be pediculated they may be removed.

V. *Fibrous Tumours.*—Seven observations, where delivery was impeded. The diagnosis is difficult, the prognosis unfavourable, and artificial delivery is often called for.

VI. *Polypi.*—In fourteen cases the prognosis was not so unfavourable as in those of the preceding chapter, because the tumours were pediculated, and easy to be displaced. In thirteen cases, one only sunk during delivery, and two afterwards; two children were born dead. If the polypus is small it may be displaced; if large, we may tie its pedicle, and divide it above the ligature.

VII. *Encysted Tumours.*—One observation. As the diagnosis is difficult, an exploratory puncture is recommeuded. The prognosis is not unfavourable.

VIII. *Elongation of the inferior Lip of the Neck of the Uterus.*—Four observations; one by Naegelé not before published.

2. *Tumours in the Vagina.*

The author speaks of steatomatous, sarcomatous, fibrous, and carcinomatous tumours; afterwards of polypi, encysted tumours, and bloody tumours; and finally of inflammation and œdema. In a case of encysted tumour, the sac was ruptured by the efforts of nature, and the labour terminated favourably.

Second Part.

Chap. I.—*Tumours of the Fallopian Tubes.*—A single case is given.

II. *Ovarian Tumours.*—Thirty-two observations, of which seventeen were dropsies of the ovary, seven indurations, five

scirrhus or steatoma, and in three the nature of the tumour was not determined. One of the mothers died during delivery, and fourteen shortly after; twenty-one of the children were born dead. The indications are to elevate the tumefied ovary, if it be at all moveable, and the head not too low in the pelvis; and if it contains fluid, to puncture it with a trocar or lancet. Artificial delivery must be attempted if the efforts of nature fail.

III. *Tumours of the Rectum.*—Two cases are given where delivery was impeded by fæcal accumulations in the rectum. A tumour is formed on the posterior wall of the vagina, on which we can make a distinct impression with the finger. Enemata, and even removing the fæces with the finger are indicated.

IV. *Tumours of the Bladder.*—In three cases, accumulation of urine was an obstacle.

V. *Calculus of the Bladder.*—In thirteen cases a calculus existed. The offending body is generally placed above the head of the fœtus, or between it and the arch of the pubis. The indication is to bring the calculus below the head, when its extraction may be accomplished; artificial delivery is dangerous.

VI. *Scirrhous Bladder.*—One observation.

VII. *Tumours in the Cellular Tissue of the Pelvis.*—Seventeen cases, of which six were steatoma, one scirrhus, six encysted tumours, one hydatid, three not determined. The prognosis depends on the density of the tumour. In nine cases it was hard. One of the mothers died during delivery, two shortly after. Of ten children, six were dead. In seven cases the tumour was soft; two mothers died during delivery, two immediately after, and two children were dead. When the tumour is soft and of but small size, we may leave the delivery to nature. Generally speaking, delivery may be aided by depressing the tumours, opening them, or extirpating them when they are not adherent too strongly to the vagina or rectum.

VIII. *Hernia.*—Three cases of vaginal enterocele and epiplocele are given. If reduction cannot be effected during delivery, we must hasten the delivery in order subsequently to perform the taxis. The author gives two cases of perineal enterocele, eight of vaginal cystocele, and two of perineal cystocele. In eight cases, one woman died during delivery; and of the children, two were dead.

This short analysis is sufficient to shew the importance of this work, in which M. Puchelt proves himself worthy of his master Naegelé. The zeal with which he has cultivated so many observations in ancient and modern authors; the dis-

cernment with which he has appreciated them, and the excellence of his arrangements, make this work one of the highest practical value.

The above analysis is abstracted from our excellent and scientific contemporary *La Gazette Medicale*, tome viii. No. 30.—Ed. *D. M. Journal.*

Observations on Monesia. By M. Bernard Derosne. Paris, 1840.

A new substance has been added to the materia medica, which seems likely to be of considerable importance. A French merchant who had resided for a long time in the interior of South America having observed remarkable effects produced in certain diseases peculiar to the country, by the use of an extract which was prepared from the bark of a native tree, determined to import this substance, known under the name of monesia, into France, and have its properties examined by competent persons.

During the last two years, experiments have been carefully made by a number of physicians, both in hospital and private practice, the chemical properties of this substance investigated; and the properties of this new therapeutic agent are now so far established, that it may be safely brought under the observation of medical men generally, and the benefit of a medicine, which has frequently succeeded where other means have failed, be afforded to the sick.

As in the case of quinine, rhatany, and other valuable medicines, the discovery of the properties of monesia has probably been the result of accident, and a knowledge of its use has been handed down by tradition. We have no knowledge of the tree which furnishes this bark, and as far as we know, no American traveller or naturalist has described it; the bark, of which we have some specimens at our disposal, is of a dark reddish brown colour, and presents a compact fracture. The extract, as prepared in the country, has been sent to us in the form of small cakes weighing about five hundred grains, and being from eight to ten lines in thickness, its colour is a dark brown, nearly black; the newly fractured surface is neither dull nor shining; it is entirely soluble in water, and its taste, which is first sweet, becomes soon astringent, and leaves finally an acrid taste, which is strong and persistent.

The chemical analysis has discovered among the soluble principles, 1, chlorophylline; 2, vegetable extract; 3, a fatty

and crystallizable matter; 4, glycyrrhizine; 5, a slightly bitter matter; 6, a little tannin; 8, a red colouring matter; 9, phosphate of lime and magnesia; 10, salts of lime, with an organic acid.

The pharmaceutic preparations which have been made with this substance, are, 1, a watery extract; 2, a syrup containing six grains of the extract to the ounce; 3, a tincture containing thirty-two grains of the extract to the ounce; 4, a decoction containing six grains of the extract to the ounce; 5, a powder containing an eighth of its weight; 6, the bitter principle mentioned in the analysis.

The extract contains nearly eight per cent. of glycyrrhizine, and twenty per cent. of the bitter principle.

In the greater number of cases, when the medicine has been administered internally, the extract has been employed in the form of pills.

Monesia has been used both externally and internally, and the following are the diseases in which it has been tried:

Used internally.—Bronchitis; hæmoptysis; phthisis pulmonalis; diarrhœa; debility of stomach; enteritis; leucorrhœa; blenorrhagia; scrofula; scurvy.

Used externally.—Purulent ophthalmia; hæmorrhoids; ulcers; leucorrhœa.

We shall now mention the general results obtained in each of these cases.

Bronchitis.—Monesia has been frequently administered in the chronic period, generally alone, sometimes with opium. In the greater number of cases it appeared to act advantageously, the breathing and expectoration becoming more free.

Hæmoptysis.—In many cases where pulmonary hæmorrhage had been prolonged, and had resisted the ordinary means of restraining it, the extract of monesia stopped the expectoration of blood.

Phthisis.—Without having any direct curative effect in phthisis pulmonalis, monesia has, in most of the cases in which it was given alone, done good by acting as a tonic on the stomach, and by favouring expectoration; and we shall presently see how useful it is in relieving one of the most formidable symptoms in this disease, namely, diarrhœa.

Debility of the Stomach.—Monesia produces a very favourable effect on digestion, and secondly on nutrition; it has been prescribed with great advantage in cases of debility of the digestive functions; it has been administered to women exhausted either with long continued disease, or by excessive loss of blood. In one case the debility was so great, that the slightest effort

produced fainting. In this case the extract was given in doses of sixteen grains in the day, and under its use the appetite reappeared, and the strength of the patient became notably increased. Upon all these patients, and upon two in particular, a variety of other tonics and astringents had been tried without any good effect.

Chronic Enteritis.—In this disease monesia has produced good effects. It has principally been useful in checking diarrhœa, no matter from what cause it may arise. Thus in accidental diarrhœa, where it proceeds from error in diet; in the diarrhœa of phthisis, even when it depends on ulceration of the intestines; in the diarrhœa symptomatic of organic affections of the abdominal viscera; in the diarrhœa so common and so obstinate which we see in nervous persons; in those which are the result of severe affections of the intestinal canal, as for example, dysentery: in these the efficacy of monesia has been established. Surprising results have frequently been obtained, especially with phthisical patients with ulcerated intestines, in whose cases all other astringents had been tried in vain, and in whom the disease was far enough advanced as to terminate rapidly in death; yet in spite of these diadvantages, monesia constantly checked the diarrhœa.

Leucorrhœa.—The efficacy of monesia taken internally has been less marked in this disease than in the case of diarrhœa, it has nevertheless been useful to a great number of the patients, who have had it either as a tonic or as an astringent. The injections have been more advantageous, but it is probably in this form that monesia will act best in fluor albus.

In a case of vaginitis, in the acute stage, M. Barron having tried the ordinary means without effect, had recourse to monesia, which put a stop to the discharge. M. Payen has seen a patient in whom the discharge was increased by the internal use of this medicine on two occasions; but when used in the form of injection, the discharge disappeared not to return.

Monesia taken into the stomach has little effect on this disease; but in one-half of the cases where it was used as an injection, it produced a cure, and in the other half a considerable diminution in the quantity of the discharge.

Scurvy and Scrofula.—In a severe case of scurvy with petechiæ on the inferior extremities, softening and bleeding of the gums, frequent epistaxis requiring plugging of the nares, M. Laurand obtained a complete cure by giving each day from twenty-four to forty grains of the extract in the form of pills; the patient also used a gargle composed of a drachm of the tincture to four ounces of water; and inhaled through the nares an acidulated water containing an ounce of

the tincture to the pint. This preparation caused the epistaxis to cease, but without the addition of the monesia, it would not succeed, M. Daynaes employed the tincture in two cases of scrofula with good effect.

Cutaneous Ulcers.—The condition of bad ulcers was constantly much improved by the application of monesia, either in form of pomade, or powder of the extract. M. Barron and Martin St. Ange have observed good effects from its use in venereal and scrofulous ulcers.

M. Maneo, at La Pitié, has employed the pomade of monesia in the case of a hepatic ulcer occupying the superior and anterior part of the thigh, and which had resisted a great variety of treatment; the pain, which was intense, was immediately relieved, and the ulcer rapidly contracted to the size of a five franc piece, when the patient left the hospital.

Similar results have been obtained by M. Payen, and Monod.

M. Martin St. Ange has cured two cases of purulent ophthalmia, by the external application of monesia; and M. Buchey, Surgeon Dentist, states, that it retards the progress of caries in the teeth, and, when united with opium, gives relief in toothach more effectually than where opium alone is used. He also recommends the use of the tincture to preserve the gums in a healthy condition.

Mode of Administration. — The preparation of monesia which has been most frequently used, is the extract in the form of pills, in doses of from twelve to thirty-six grains in the day. M. Martin St. Ange has two or three times gone so far as forty-five grains in the day. The syrup has been rarely used, it is less active than the extract, and is only preferable in the case of children; the tincture has been used in the form of injections, containing a drachm of the tincture to six ounces of water, and a stronger injection may be used without inconvenience. One or two drachms of the tincture may be given internally in the day, in a bitter infusion.

For ulcers the pomade has been employed frequently; the extract in powder has been found preferable, and perhaps for this purpose the bitter principle of monesia will be found more advantageous, as has been stated by M. Martin St. Ange.

Such are the experiments which have at present been made upon monesia. These observations, made with care and caution, on subjects of different ages, sex, profession, and habits, give incontestable evidence of the activity of this substance; and if to these facts, the number of which is above three hundred, are joined those of which a less accurate note has been kept, and the numerous and conclusive facts observed in America,

it must be admitted, that we may recommend, without presumption, that the Academie Royale de Medicine should examine this substance, and what has been done in its investigation.

In general it may be said, that monesia is most active in diseases of the digestive organs, in hæmoptysis, and uterine hemorrhage; while in cutaneous diseases, and mucous fluxes from the genitals and lungs, its action appears less marked. Experience may perhaps point out newer therapeutic applications: the bitter matter, which has been less employed than the extract, appears to possess a peculiar mode of action.

This medicine presents this remarkable property, that although endowed with energetic power, and producing considerable stimulating effects on ulcerated surfaces, it produces no irritation of the stomach, as many tonics do.

Finally it must be observed, that physicians who have experimented on this substance, have in all cases, in order to determine its relative activity, prescribed it after having used other means. And lately a comparative experiment has been made between pomade of tannin and of monesia, which has shewn the superiority of the latter substance.

Six Mois de Sejour en Angleterre pendant 1836. Par Sirus Pirondi, D. M.

Théorie de la Phlogose, de T. Rasori. Traduité de l'Italien, par Sirus Pirondi, D. M.

M. Pirondi tells us in his preface, that his views of the national character, before visiting England, were not very favourable; but he has the candour to add, that his prejudices vanished before the hospitable reception he met with there. The author does not appear to be one of that class, of which Count Smorltork, in the Pickwick Papers, is a fair specimen; and who, after a short residence in a country, or rather a flight through it, professes not only to give an accurate description of the many objects of interest which have met their eye, but also pretend that they have studied its manners, character, and politics so attentively as to be able to give a very sound opinion from personal experience upon those subjects. He saves himself, we say, from being classed with such, by stating that the notes from which this book was formed, were merely records of a time passed very agreeably, and were not intended for publication.

The author, with his friend Professor Manni, who accom-

panied him during his tour, arrived in London after a disagreeable passage from Calais, and having been detained several hours at the custom-house, did not reach his destination (Leicester-square) until late in the evening. During his stay in London, he visited the British Museum, St. Paul's, Westminster Abbey, and the Parks; and in his notice of Hyde Park, he has had the bad taste to observe, that the event which the Achilles has been erected to commemorate, will no doubt be estimated more properly by posterity than it is at the present day; and he quotes Byron's lines:

> "O bloody and most bootless Waterloo!
> Which proves how fools may have their fortune too,—
> Won half by blunder, half by treachery!"

Whatever right an Englishman may have to compose such lines, a Frenchman has no business quoting them.

Greenwich, Windsor, and Richmond were not omitted to be visited by our author; and it was whilst seated on a bench in the last-mentioned place that he makes his first observations upon English manners. The English, he says, seldom use napkins, but make the dinner-cloth serve their purpose; and after dinner an Englishman thinks nothing of stretching himself upon some chairs, and sleeping off the fumes of his Madeira. As for the ladies,—he speaks highly in praise of their personal attractions, and freedom from all those little captivating arts, which are put in practice by foreign damsels; but he thinks the married ladies are under nearly as much restraint as the inmates of a harem.

Amongst the circumstances which excited his surprise in London were the good appointments of our stage-coaches; though it appears strange to him that the great majority of the passengers should be placed along with the luggage on the outside, giving the coach the appearance of a huge cauliflower, with its head so disproportionate to the rest of it; also the good order preserved by the police, without the intervention of the military, and without any arms except a bâton, the mere exhibition of which is sufficient to awe a crowd; and lastly, the strictness with which the Sabbath is kept, and which must indeed have seemed most remarkable to a man accustomed to the loose frivolity of a Parisian Sunday.

M. Pirondi paid a short visit to Bristol at the time when the British Association held their annual meeting there, and of course saw the city to very great advantage; on his journey thither he was greatly pleased with the excellence of the roads, the neatness of the cottages surrounded with flowers, and the beauty of the demesnes. From Bristol he returned to London,

from whence, after remaining a few days, he proceeded to Birmingham, where he stopped a short time to examine the principal manufactures; and then continued his journey to Liverpool, with the view of crossing the Channel. Before leaving England, he expresses his sense of the great attention and kindness he had met with from persons to whom he had had letters of introduction, and he bestows great encomiums on the straightforward dealing of the English shopkeeper, who is not ashamed, when he becomes rich, of the source from whence he has drawn his wealth; and finally, he strongly reprehends the custom of burying around churches in towns, as being highly detrimental to public health.

M. Pirondi, when he crossed to Dublin, intended to have made a longer stay in Ireland, but the opening of the School of Medicine at Edinburgh hurried him away. He was greatly struck in landing, by the aspect of poverty which the country wore, affording so remarkable a contrast to the independent comfort of the land he had just left; but he found much to admire in our city, which he says is *magnificent* in all the force of the expression. The streets he describes to be the finest he had ever seen, and all the buildings in excellent taste. Doctor Litton was kind enough to shew him every thing worth seeing in the Dublin Society House, with which he was much pleased. He also accompanied him to the Glasnevin Botanic Gardens, and the University, which he thinks nearly as large as the four and twenty colleges of Oxford. He visited the Meath Hospital with Dr. Graves, whose practice he highly approves of, and he also went over the House of Industry, Richmond Hospital, and the Lying-in Hospital.

He concludes his remarks on Ireland, with some observations on its present unfortunate position, which, without reading the title of his work, would shew that the author had resided a very short time in the country, and had obtained a very partial view of its political state.

He started for Scotland, anticipating no little pleasure from a tour amongst its justly celebrated scenery; and having changed steam-boats at Greenock, proceeded up the Clyde to Glasgow, which he left shortly for Edinburgh. This city was full of interest to the young physician, as being the metropolis of the medical world, and as having once guided the practice of Europe. After describing his visit to the University, from which he derived much pleasure, he proceeds to give a minute account of Dr. Macintosh's establishment in Argyle-square, and the excellent museum attached to it; and he speaks in the highest terms of that gentleman.

The situation of Edinburgh he considers to be very beauti-

ful, and he enjoyed extremely excursions which he made to Perth, Sterling, Aberdeen, and Abbotsford, not forgetting Holyrood-House.

From Edinburgh, M. Pirondi returned to London, through Newcastle, York, Sheffield, Nottingham, and Cambridge, and prepared to see the wonders which the shortness of his previous sojourn there had not permitted him to do. He visited several charitable institutions, and amongst others, the hospitals; in inspecting which, he was greatly struck by the extreme attention to regularity and comfort exhibited throughout them. The author visited also Somerset-House, the India House, the Tower of London, the House of Correction, in all of which he found much to admire, and we shall give a compendium of his concluding remarks on the British, in which he wisely abstains from touching on the intricate subject of politics, and confines himself to an exposition of his view of the national character.

The English, he observes, are naturally of a robust constitution, and are early accustomed to endure the inclemencies of the climate; their simple food and light clothing are well calculated to preserve the health and strength acquired by habits of exercise, and to give them that inflexibility of countenance which enables them so well to conceal their feelings. They are from childhood impressed with a profound respect for religion and its ministers, and this feeling, which gains strength with their years, is sometimes pushed to intolerance; the religious spirit which prevails in the country, he adds, may be estimated from the strictness with which the Sabbath is kept, particularly in Scotland. Education in England, he remarks, commences at a very tender age, and there is more seriousness both in the aspect and manners of their young people than in those of other countries. The unmarried ladies, he observes, enjoy great liberty without it affecting their morals, and they are constantly permitted to walk unattended with gentlemen of their own age; they seldom marry before two-and-twenty, and their marriages are generally those of choice and not of interest.

The English, he continues, cultivate the arts; but this preference leans towards the antique, perhaps from the consciousness of some intimate connexion between them and nations that are no more.

He says there is much musical taste amongst the English, and those who attend the King's Theatre are quite capable of appreciating good music; the singers at the other theatres, however, he adds, though they have voices, do not know how to manage them well.

The sciences, in England, he observes, are brought to great perfection owing to the high talents of those who study them;

and England is the first country to perfect and derive advantage from the theoretical labours of France.

Medicine and surgery, he states, can boast of great names in England, and men of distinguished merit are not confined to the three capitals alone; in many of the provincial towns are to be found men high in their profession, and there is scarcely any of the larger towns that has not its medical school, library, and museum.

The spirit of association, he observes, is a passion with the English, but it is the secret of their prosperity. Roads, bridges, and railroads are constructed by association; useful and philanthropical institutions are regulated and supported by association; and associations are formed for the preservation of certain rights or privileges. M. Pirondi concludes his observations on England with a stricture on the bad working of the law of arrest, as exemplified in the case of a friend of his, Dr. Ryan, and he will be glad to learn that the objectionable Statute has since been repealed.

His book is pleasingly written, and gives a very fair view of the country; but the author has on more than one occasion been too ready to take the conduct of individuals as a sample of the manners of the country; and of course he must have depended very much upon the statement of persons—in many cases perhaps not the best qualified to make those statements—for the correctness of several remarks which we find in his book. These defects were, no doubt, owing to his short residence amongst us, and to the fact of his being engaged collecting matter for another work; and when he doffs his travelling dress, and appears before the public in the dignified robe of the physician, we shall not hesitate to welcome him as an old friend.

The review of M. Pirondi's "Six Mois en Angleterre," has been made with a view to introduce him to our readers. We now bring him forward in a new character, as the accurate translator of the able work of Rasori on Inflammation. This work appeared in Italy in the middle of 1827, and ran through many editions in a few months. The translation of M. Pirondi carries with it all the force of the original, and the delicacy of the French language has been exerted in all its nicety to re-produce in the most intelligible manner the ideas in the original Italian.

The observations of Rasori were collected during forty years of study and of most extensive practice; and the force of his genius caused circumstances and symptoms, which before his time were almost unnoticed or slighted, to furnish inductions the most profound, extensive, and legitimate.

Rasori was trained in the great school of Sydenham, deeply imbued with the philosophy of Bacon, of strong mind, and pos-

sessing powers of keen perception and accurate observation ; and the severe inductive logic which he employed, rendered him particularly fitted for the production of such a work as the one before us. His Theory of Inflammation is founded on clear and certain principles, deduced from numerous and simple facts. All speculative views are avoided, and according to the usual acceptation of the term, it should not be called a *theory*, which was only the result of cautious, long-continued, and minute inquiry, of seeing and collecting facts without any preconceived notions, and the application of a sound and direct reasoning to those facts, with due respect for truth.

This work cost Rasori forty years of continued study; having read it, it is easy to conceive this, and yet it served but as the prologue to his great work, "Nouveaux Principes de Thérapeutique." Although a too early death swept him away from science and humanity, he has elevated for himself a monument *ore perennius* in his Treatise on Inflammation. Rasori was a distinguished contributor (and we have often quoted from his papers) to the Annali di Scienze e Lettre, and his thorough knowledge of his own language caused his writings to be remarkably concise and concentrated.

It was intended that the French and Italian editions should have appeared at the same time, but the unexpected death of Rasori caused delay, and gave precedence to the Italian one.

M. Pirondi promised to bring before the public very shortly a collection of the works of his master; should they equal the elegance and fidelity of the present translation, we shall feel most happy in introducing them here to the notice of our scientific brethren.

J. C., AND S. L. L. B.

SCIENTIFIC INTELLIGENCE.

Remarks on Enlargement of the Tonsils, attended by certain Deformities of the Chest, by J. Mason Warren, M.D.—In the remarks which will be offered on certain deformities of the chest which complicate this disease, nothing original is intended; they may serve, however, to draw the attention of the society to the relation which exists between the enlargement of the tonsils and this affection, and the results of the case will lead us to suspect that the symptoms which have been ascribed to this deformity, may be more referrible to the obstruction which exists in the throat.

In 1827, M. Dupuytren published a paper on the lateral depression of the parietes of the chest, consisting of a depression more or less great of the ribs on each side, and a proportionate protrusion of the sternum in front, accompanied by some antero-posterior curvature of the vertebral column. A portion of these cases occurred in children of a scrofulous habit, and were invariably accompanied by an enlargement of the tonsils.

The symptoms described by M. Dupuytren as attending this disease, were habitual shortness of breath, and difficulty of enunciation. With infants there was great difficulty in taking the breast, the child being threatened with suffocation whenever the nipple was detained for any length of time in the mouth. During sleep, the mouth was kept habitually open, and the respiration accompanied by great noise, and frequently interrupted by frightful dreams aud cries. "These symptoms," says M. Dupuytren, "may be increased so as to prevent the development of the vital functions, and cause death in the earliest period of life. When these difficulties do not induce death immediately, they may destroy life at a later period, either in preventing the child from taking the breast, or in so altering the nutrition as to prevent the development of the strength of the different organs; in this case death does not at once take place, but the child lives in a miserable state of feebleness and emaciation, which deprives him of the greater part of his faculties."

In 1827, shortly after the publication of this paper, Mr. Coulson, of London, published some cases in confirmation of those given by Dupuytren, adding, also, three cases of his own, of a deformity of the chest, different from that before described. "The external appear-

ances of the chest," says Mr. Coulson, "in this second kind of deformity, are directly the reverse of those which we have just been considering. The sternum is hollow or concave anteriorly, the sides of the chest are very prominent, and the spinal column but slightly, if in any degree, altered from its natural shape; this is not so frequently congenital as the former kind, but frequently occurs in persons of a weak habit, who are narrow-chested, and stoop a great deal. The constitutional symptoms are very much the same as those attendant on the other kind of deformity." On the three cases appended to the paper of Mr. Coulson, and three of the four cases of M. Dupuytren, enlargement of the tonsils existed; but in none of them does it appear that removal of these organs was practised, although it is stated that in one or two of them the tonsils were so large as nearly to fill up the posterior part of the fauces, so that we are not enabled to judge of what would have been the change effected on the symptoms referred to the chest, had this operation been performed.

Within the last two years, twenty cases have occurred in our practice, in which it was thought necessary that an operation for the removal of the tonsils should be practised: in nineteen of these cases the operation was successfully performed; in one case the tonsils projected so little into the throat, as to make it impossible to seize them with the instrument. The operation was temporarily deferred. Of these twenty cases, fifteen were children, or less than twelve years of age.

Of the fifteen children, eleven had more or less deformity of the chest, consisting, in the greater number, of a projection of the cartilages of the ribs forwards, with a considerable excavation of the sternum. In these patients very little curvature could be detected in the spinal column.

In the five adults, no alteration of the parietes of the chest was perceptible.

The symptoms occurring in these patients were as follows:

In every one of them was more or less difficulty in respiration, in many cases the noise being so great during sleep as to make it impossible for any person to sleep in the same room; the sleep was often disturbed by frightful dreams.

In many of the patients there was great difficulty of swallowing, liquid food being often regurgitated into the nostrils; in one case, no solid food could be taken without the previous use of a powerful astringent. About half the cases were attended with severe constitutional symptoms.

In one case entire deafness was present. Some of the patients were liable to periodical attacks of fever; in one case, a child, five years of age, returning latterly as often as once a fortnight, and lasting three or four days. Eight of the fifteen children showed more or less marks of a scrofulous habit. Eighteen of the patients had both tonsils removed; the other patient being so much relieved by the removal on one tonsil, that it was unnecessary to have the operation repeated on the other side.

In about half the patients this operation was performed on both sides the same day; in the others a week was allowed to elapse before the other tonsil was removed.

In eighteen out of the nineteen cases, almost immediate relief was afforded to all the symptoms; in the other case, no great relief was apparent, and this seemed to be attributable to the particular shape of these organs, the base being quite broad, and extending some distance down the throat; about half of each tonsil was removed. At the end of a short period, an appearance was presented as if they had been again regenerated; this arose from the upper and lower portions rising or curling up, as it were, after the apex had been removed. At the end of two years, this patient submitted to a second operation, followed by much relief, and is now in a fair way of recovery.

The operation, as performed by the present improved instrument, is instantaneous—not attended with much pain; in no case was there any considerable hæmorrhage,—usually nothing more than a few mouthfuls of blood are discharged. The patients were able to return home and resume their ordinary occupations, as if nothing uncommon had occurred, a slight soreness only being experienced for the few following days.—*Philadelphia Medical Examiner*, May 18, 1839.

Transactions of the Pathological Society of Philadelphia. October 14th, 1839. The President, Dr. Gerhard, in the Chair.—Dr. Stillé exhibited a specimen of *fungoid tumours of the tibia*, and read the following notes of the case:

I. R., an Irishman by birth, a journeyman in a powder factory, and aged thirty-three years, was in the enjoyment of robust health, when, about twenty months ago, he fell, and struck the outer part of his left knee, between the tubercle of the tibia and the head of the fibula, upon a rounded stone. No ecchymosis followed the injury, but a small lump made its appearance within a few hours afterwards, which, after three or four months, increased to about the size of a hen's egg, and rendered the movements of the knee so difficult and painful as to oblige him to abandon his employment. He came to the Pennsylvania Hospital, where, after a mature examination, the tumour was thought to be aneurismal; and in September, 1838, the femoral artery was tied in the hope of curing it. During five weeks the operation seemed to have been successful, but at the end of that time the patient was discharged at his own request. On his return home he ceased to observe the precautions he had been advised to; and the tumour reappeared, and continued to increase slowly until May, 1839, when, on making a sudden effort to straighten his leg, he felt, to use his own expression, "something give way about the knee." From this period the growth of the tumour was more rapid; R. was unable to leave his bed, on account of its weight, and the pain which change of position produced in it, and he again entered the hospital during the last month. It increased notably during several weeks,

and the surgeons of the institution decided that it should be removed by amputation of the thigh.

The following note was taken on the day preceding the operation :—The leg was bent upon the thigh at an angle of from 90° to 100°, and could be moved passively within these limits, but not without inflicting considerable pain. The muscles of the whole limb were emaciated; there was some œdema of the foot. The health of the patient was good, with the exception of a general feebleness referrible to his long confinement in bed. One of the glands of the left groin was slightly enlarged and sore. The tumour formed a rounded mass, commencing at eight inches and a half from the lower end of the tibia, and extending to the patella and the condyles of the femur, which could be felt as distinct from it. The skin covering it was a little more ruddy and smooth than that of the thigh, and was traversed by dilated and tortuous veins. The surface, in general, was smooth, and, although undulating, presented no abrupt prominences or depressions. The tumour was of a more regularly rounded form in its anterior and external portions than internally and behind. Its greatest circumference measured sixteen inches. An inch above its junction with the tibia below it measured twelve inches; and on a line passing through the point of the patella and the ham, just above the tumour, twelve inches and a half in circumference. Its greatest length, or that measured from the point of the patella to the nearest point of the shaft of the tibia, was five inches. To the touch, the skin covering the tumour was sensibly warmer than on the thigh. It offered various degrees of hardness—its outer half being almost as resistant as bone, and somewhat elastic under firm pressure, which was painful. A like degree of hardness existed in the whole circumference of the tumour near its upper and lower lines of attachment,—but in the middle space, on its inner side, there was much less hardness, and a high degree of elasticity, but no signs of fluctuation. In the ham the tumour was soft, but less elastic. When the tumour was slightly grasped by the hands, a faint pulsation could be distinguished. The pulses of the popliteal artery could be felt high up in the ham, and at the same point there was a distinct bruit de soufflet. Where the shaft of the tibia joined the tumour, an angle was formed, owing partly to the convexity of this latter, and partly to the fact that the axis of the tibia was not directed towards the condyles of the femur, but to a point behind them. All attempts to move the leg passively gave great pain.

The amputation of the thigh was performed by Dr. Norris on the 16th inst.; the femur was divided about the junction of its middle with its lower third. The medulla of the upper fragment was of a light yellow colour, and of a pasty consistence, and the bone was less resistant than natural. *Nineteen arteries* were secured at the time of the operation, and secondary hæmorrhage having occurred about ten hours afterwards, five additional ligatures had to be applied.

The excised portion of the femur being sawn in two through its

epiphysis, the reticulated structure was found filled with a yellow, butter-like substance, and was easily crushed by the finger. The medullary canals of the femur and tibia were filled by the same yellow substance, and these bones themselves had a sensibly diminished consistence. On dissecting away from the tumour the skin and muscles, (which were pale and flabby,) its greatest circumference measured thirteen inches and a half. The cartilages of the knee-joint presented no unusual characters, except thinning and slight discoloration of the one lining the external articulating fossa of the head of the tibia. The popliteal vessels and nerves lay over the back part of the tumour, and separated from it by their common sheath, but no branch from them could be found communicating with its interior. There was no appreciable deviation from the ordinary size and structure of the popliteal artery. Several tunics enveloped the tumour: 1st. A complete one of condensed cellular substance, mingled with a little fat. 2nd. The supercial fascia of the muscles of the upper part of the leg, considerably thickened, and apparently continuous with the periosteum. 3rd. A bony shell entirely surrounding the tumour at its lower, and also at its upper part, but in the intermediate space complete on the outer half of the tumour alone, the inner half presenting only a few bony spiculæ distributed over its fibrous layer. This bony shell was from four to five lines thick where it joined the shaft of the tibia below, and the articular cartilages above; in other parts it was pretty uniformly about two or three lines in thickness. It appeared to consist in a globular expansion of the external table of the tibia, while the internal table, the intermediate spongy structure, and the medulla, were continuous with the cavity of the tumour, and the matter contained in it. This matter was chiefly composed of a soft solid, closely resembling a child's brain that had been crushed by the fingers. It was of a ruddy or brownish colour, and generally disposed around a number of central masses or nuclei, which had in some places the characters of yellow, semi-transparent coagula; and in others of a cerebriform matter, rather firmer than the more superficial portions of the tumour. In the centre of one nucleus of the latter sort, a few grains of calcareous matter were detected. Under the spot formerly occupied by the supposed aneurismal tumour, but within the present bony parietes, was found a clot about two inches and a half long, by three-quarters of an inch thick, of a buff colour, lamellated in its structure, and firm under pressure. It was surrounded on every side by the prevailing brain, like matter of the cavity. A number of rounded apertures might be perceived on the surface of a section of the former portions of the tumour, but their walls were very easily torn by the probe. No vessels could be distinctly traced within the tube, but streaks, and small masses of blood, were frequently to be met with. Several small cysts were opened, and found to contain a yellowish, transparent, viscid fluid.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

SESSION 1839—1840.

Fourteenth Meeting, March 7, 1840.

Professor Harrison in the Chair.

1. *Diffuse Inflammation; Purulent Deposits in the Joints; Pulmonary Phlebitis.*—Mr. Adams presented the recent parts in this case. The patient was a young woman, who in the seventh month of her first pregnancy was attacked with convulsions, for which she was blooded in the right arm. On the second day after venesection, the vein became inflamed, and continued so for three or four days, when she was again attacked with convulsions, for which she was blooded in the left arm. She was then seized with parturient pains, and was delivered of a seven months' child, which lived three days, and then died of convulsions. Her labour was rather a short and easy one, and she had no hæmorrhage. During this period the inflammation of the vein of the right arm continued, and she was admitted into the Richmond Hospital about ten days after the first bleeding. She complained of agonizing pain in the right arm. Both the knee joints were enlarged, painful, and evidently distended with fluid. It was obvious too, that she was labouring under extensive disease of the chest; and on examination, Mr. Adams found that she had not only double bronchitis and double pneumonia, but also pleuritis with effusion into the right cavity of the chest. She had intense pain of the right side with inability to make a full inspiration, œdema of the feet, and severe pain of the arm, which was swollen up as high as the shoulder. She complained of feeling sore all over her body, moaned constantly, and tossed about in a state of feverish restlessness. Her respiration was 80 in a minute, her pulse 140; her tongue was dry and brown, and she laboured under severe diarrhœa. With respect to treatment, Mr. Adams said it would be easy to conceive, that in such a case, and with such symptoms, very little could be done. The fever ran so high, that it was deemed necessary to take some blood from the arm, and act on the skin by antimonials. Death took place on the fourteenth day from the first bleeding. On examination of the body, the traces of organic disease were found to be numerous and extensive. The mucous membrane of the colon was found studded with an immense number of small circular ulcers. These ulcers were ranged in lines, but not affecting the glands, being distinct spots of ulceration occupying the prominences of the mucous membrane. On examining the synovial membrane of the joints, Mr. Adams found ulceration of the cartilage in one only, but there was purulent matter in all. The ulceration occurred in the first joint of the index finger of the right hand, in which the synovial membrane was destroyed, and the cartilage of incrustation nearly

absorbed. On cutting into the right knee joint, which was greatly distended with fluid, a considerable quantity of yellowish green fluid, of the consistence of thin honey, escaped. Both the cartilages of incrustation, as well as the articular cartilage, were free from ulceration, but they were in some degree vascular, The lungs were next examined. In the right cavity of the pleura, Mr. Adams found a considerable quantity of serous fluid mixed with purulent matter. There was also some effusion into the left pleura, but not of so distinct a purulent character. The substance of the lung presented evident traces of pneumonia in all its stages. There was also a peculiar alteration observed in it, which Mr. Adams has invariably observed in all cases of this description, and to which he begged leave to direct the attention of the Society. This was the occurrence of a number of small circular depositions of pus, each surrounded by an ecchymosed areola. This phenomenon had been noticed before on various occasions by Mr. Adams, in cases of diffuse inflammation and in glanders, and in his mind these depositions were from inflammation of the small veins of the lungs,—in fact a true phlebitis of that organ, accompanied by deposition of pus. In the present instance he had traced one of these yellow deposits to a spot where the lung was in a state bordering on sphacelus, and where the veins presented all the phenomena of capillary phlebitis. The small veins were thicker and yellower than natural, and the same kind of adherent clots were found in their interior. He had examined the basilic vein in the right arm, and had found it thickened and obstructed; the capillary veins of the lung were nearly in the same state. He would beg leave to direct attention to this phenomenon in the lungs of persons who died of diffuse inflammation, for in every instance he had been able to trace these little purulent deposits to inflamed capillary veins. In some cases the disease will be found to produce gangrenous cavities.

In this case no traces of inflammation were found in the vessels of the uterus; the whole train of symptoms commenced with inflammation of the basilic vein. But whatever may be the situation of the inflamed veins, if the purulent matter mixes with, and is carried into the current of the circulation, the result is the same. Mr. Adams said he disagreed with Velpeau, who has maintained, that the pus should be carried through the whole circulation before it could produce its specific effects, and believed Blandin and Dance, that as soon as it arrives at the capillaries of the lungs, symptoms of poisoning, ushered in by rigors are produced.

2. *Formation of external Abscess in Empyema.*—Dr. Corrigan presented two casts illustrative of the appearances of the internal and external parts in this case.

The case was one of empyema, in which the disease in the upper part of the chest had undergone the process of cure; while the lower half remained filled with purulent matter. This was very well seen in the cast of the external parts of the body, in which the prominence of the lower half of the left side was sufficiently obvious. During

the course of the disease a tumour formed at the lower part of this prominence, and after some time it was quite evident, that this point was the seat of phlegmonous inflammation. After some days fluctuation could be so plainly felt, that an opening was made on the tumour, giving exit to a considerable quantity of pus. The matter continued to drain off for some days, but the patient sank gradually under the irritative fever which attended the disease. Dr. Corrigan said he wished to observe, that in this and similar cases, the phenomena which attend the formation of matter externally is very apt to prove deceptive. The opening by which the fluid in the cavity of the pleura escapes in the first instance, is often very small, so small indeed, that it will barely admit the introduction of a probe, while the matter in the cellular tissue beneath the skin is often in very considerable quantity. The fluid which escapes from the pleural sac creates and keeps up irritation, and hence the quantity of pus in the external abscess is sometimes much greater than one would expect. When an incision is made, a large quantity of matter flows out, and the operator thinks he has made a sufficiently large opening. The lapse of four-and-twenty hours is sufficient to convince him of his mistake; the matter now either trickles out very slowly, or perhaps stops altogether, and continues so until a fresh opening is made. Dr. Corrigan said he mentioned this as a practical fact. In all cases of this kind, it is necessary to open, not only the external abscess, but also to take care, that the matter of the empyema has a ready mode of exit. The next point to which Dr. Corrigan said he would direct attention, was one connected with physical diagnosis. When percussion was made, the ordinary degree of dulness was observed, extending from the upper to the lower part of the chest over the ribs and their cartilages. At the end of three weeks, when the process of cure had made some advances, and while the prominence at the lower part of the chest was still on the increase, this remarkable feature shewed itself: while the dulness continued stationary on the left side from the axillary region down to the bottom of the thorax, both posteriorly and laterally, that portion of the same side of the chest covered by the cartilages of the ribs began to assume a clear sound on percussion, the clearness commencing below and extending upwards, so that at the end of three or four weeks it had ascended as high as within a rib's breath of the mamma. Laterally there was dulness down as far as the false ribs, while anteriorly the sound was clear on percussion. This was calculated to create some doubt as to the nature of the disease. It was plain that there was matter in the lower part of the chest, but it might be argued from the clearness anteriorly, that the disease was pneumothorax. It was true there were facts which militated against this supposition, but the phenomenon was calculated to give rise to some doubt.

Dr. Corrigan came to the conclusion, that it was a case of imperfect absorption, and that during the process the diaphragm had become engaged, so as to have its anatomical relations altered. In the early stage of the disease, the diaphragm had been forced down by the

weight of the fluid in the cavity of the pleura, but as the process of cure went on, it rose up again into the left side of the chest, and was followed by the bulging extremity of the stomach. This is liable to distention from flatulence, and under such circumstances a tympanitic sound becomes audible on percussion over the parts in its vicinity. This explains the clearness on percussion observed over the cartilages of the ribs : and the correctness of this opinion was fully verified on dissection.

3. *Peculiar Syphilitic Eruption.*—The next case to which Dr. Corrigan wished to allude, was one of skin disease, not uncommon in the country parts of Ireland, but comparatively rare in other European countries ; if we are to judge from the circumstance, that it has not been mentioned by continental writers. It is well known in this country, and has been accurately described by Dr. John Crampton, and the late Mr. Wallace. It is termed button scurvy, and is generally supposed to be of venereal origin ; in the present case it was said to be contracted from sleeping with a person labouring under secondary venereal. When an individual is infected with the disease, and it is beginning to spread over the body, it is first observed about the shoulders, nates, or legs, in the form of small projections of the skin ; these in the course of eight or ten days increase to about the size of a split-pea. If one of these projections be examined about this time, it will be found to be an hypertrophied condition of the true skin, and that the part contains more blood than in the natural state. The cuticle is then separated by an effusion of thin fluid, and the projection becomes inflamed and takes on the usual action observed in psydracious pustules. The surface begins to secrete purulent matter, which dries, concretes, and assumes the form of a scab ; under this a fresh layer of pus is effused, which in its turn becomes scab, and in this way layer after layer is deposited, until at length a prominent scab is formed, which bears some resemblance to rupia prominens. There is, however, this difference ; in rupia the pus is secreted by an ulcerated surface, and when the scab is removed, a depression in the true skin is seen ; but in button scurvy there is no depression, for instead of a destruction of the surface under the scab, there is an actual hypertrophy of the chorion; the papillæ of the skin are enlarged, and project beyond its surface. The scab of dry purulent matter which lies over it, is of considerable thickness, and when this is artificially removed, the subjacent surface is marked by a number of bloody dots, shewing the increased vascularity of the part. The vascular papillæ which constitute the prominence, are full of blood, and easily torn. At this period of the disease, its characters are so well marked as to distinguish it from any other form of cutaneous disease. When one of these spots appears on the lip, nose, or scrotum, it is apt to give rise to suspicions of malignant disease in those who are unacquainted with its characters, but it is easily distinguished by its feel, which is soft, and without any of the induration which characterizes scirrhus. The total absence of hardness at the base of the

scab, and the constitutional symptoms, are quite sufficient to establish a correct diagnosis. With respect to treatment, it is very simple, any local application of an astringent kind, or even a poultice, will be sufficient to remove the scabs, but they will return again. But if the gums are touched with mercury, the disease vanishes with extraordinary rapidity, and seldom or never returns; at least, Dr. Corrigan had only known one case in which it returned after the use of mercury. The rapidity with which it disappeared under this mode of treatment, was remarkable. As soon as soreness of the gums commenced, the abnormal growths on the skin began to wither, so that in the space of forty-eight hours they no longer presented the same characters.

5. *Calculus in the Bladder.*—Mr. Adams presented a specimen of diseased bladder, the combined effect of calculus and stricture. Early in life the patient had been attacked with stricture followed by retention and extravasation of urine. About a year since he was admitted into the Richmond Hospital, labouring under evident cachexy, and harassed by irritability of the bladder, which on examination was found to be caused by the presence of a calculus. He appeared so debilitated that Mr. Adams felt unwilling to perform an operation, Mr. Peile, who saw the case, expressed himself in the most decided terms against an operation. All that was done, therefore, was to endeavour as far as possible to relieve the sufferings of the patient. Another circumstance contra-indicating an operation, was, that on making an examination through the rectum, M. Adams found the prostate to be greatly enlarged. On examination after death, the mucous membrane of the bladder was found to be of an intense red colour, greatly thickened, and in several spots destroyed by gangrenous ulceration. The ureters were dilated and vascular, the mucous membrane of the kidneys was diseased, their substance contained several hydatids, and there were a number of small calculi in the pelves. On examining the stone in the bladder it was found to be one of those large, soft calculi which are not unfrequently met with in such cases. The bladder presented the usual columnar appearance. Mr. Adams said he was anxious to exhibit the preparation, as it was rare to see the disease in so recent a state, and the pathological appearances are not long preservable. He had procured an excellent drawing of it, by Mr. Conolly, which he begged leave to exhibit. Gentlemen would find, on inspection, that it was an accurate delineation of appearances, which are in general so evanescent that few persons have the advantage of examining them with satisfaction. (*Museum, Richmond Hospital.*)

Fifteenth Meeting, March 14*th*, 1840.

Mr. Carmichael in the Chair.

1. *Enormous Medullary Tumour of the Breast.*—Mr. Carmichael exhibited a cast of an enormous tumour of the breast, which he believed to be medullary. The specimen was taken from a woman

about sixty years of age, of a pale, cadaverous aspect, and of that hue of countenance, which is so often characteristic of malignant disease. She stated, that she had been labouring under the affection for two years; that for eighteen months, the tumour was small and painless, but about six months ago, without any known cause, it became painful, and began to increase in size with extraordinary rapidity. It was about this period she was first seen by Mr. Carmichael in consultation with Dr. Irvine. A few days since it was determined to remove the tumour by an operation, which was accomplished without much difficulty, and the woman returned to the country with the wound in a very favourable state. Mr. Carmichael said he had no doubt the mass was a medullary fungus, for she had severe lancinating pain in the part, and the superficial veins were in that state of congestion, which is characteristic of malignant tumours. On removing the tumour, Mr. Carmichael took its dimensions, and found that its circumference was thirty-three and a-half inches, its vertical measurement twenty-two and a-half, and its transverse twenty-three inches. Malignant disease, of a medullary character, is remarkable for its rapid growth, and attains a much greater size in a given space of time, than any other morbid product, except hydatids. True scirrhoma never increases to such an enormous size. The tumour in this case grew rapidly within the last six months, and felt soft and fluctuating, but without any sign of ulceration. Mr. Carmichael said he had witnessed a case in which medullary fungus had attained the size of the mass before him in the space of three months. The patient was a lady, and had the same hue of countenance as the patient whose case he had now detailed. Mr. Carmichael concluded by exhibiting the tumour, which he thought needed no remark, and would speak for itself. (*Museum, Richmond Hospital.*)

2. *Cerebriform Tumour of the Pharynx.*—Dr. M'Donnell said, the specimen before him was similar in its nature to that exhibited by Mr. Carmichael. In removing the parts, it was necessary to disfigure the body as little as possible, and the consequence was, that Dr. M'Donnell was obliged to leave those parts behind, which would shew the connexions of the tumour. It was a good specimen of cerebriform fungus, and was seated at the upper and back part of the pharynx. On examination during life, when the finger was passed along the tumour towards its root, it felt tolerably firm and tuberculated, and on attempting to raise it up, it communicated to the finger the sensation of being connected with, and proceeding from the bodies of the upper cervical vertebræ. This, however, was found on dissection not to be the case, for on minute examination it was discovered to take its origin from the basilar process. The anterior part of the tumour, which was broken and rugged, lay against the posterior nares, and pressed down the soft palate, presenting in this situation a distinct sense of fluctuation. Dr. M'Donnell passed a narrow-bladed, sharp-pointed bistoury through the cavity of the mouth, and made an exploratory puncture in the anterior part of the tumour, but as nothing came away, except a small quantity of dark-

coloured blood, he determined not to interfere further with it. When the patient came into hospital, his speech was so indistinct, owing to pressure on the posterior nares and palate, that it was quite impossible to understand him. His mind also appeared to be considerably clouded, and he was evidently labouring under some cerebral affection. There was another tumour of a similar nature, but not so advanced in growth, being not much larger than a hazel nut, which was found to be soft, elastic, and consisting of the same kind of morbid structure; this was situated in such a manner, as to have pressed upon, and deformed the opening of the internal auditory canal; and the man had complained of pain in the corresponding ear, and deafness, as one of his earliest symptoms. There was very little appearance of a tumour externally, except at the right side, which presented a slight degree of fulness. Pressure, applied externally on either side of the neck, rendered the tumour at the back part of the cavity of the mouth more distinct and obvious. The following are a few particulars of his history, which Dr. M'Donnell was able to collect.

James White, aged twenty-seven, was said to have been in good health about twelve months since, with the exception of dimness of the right eye, and deafness of the right ear, which had commenced about a year previously. His symptoms had commenced with pain of the right eye, which was followed by pain and a flow of purulent matter from the right ear. Some time afterwards he felt his sight growing dim, and the sense of hearing becoming more and more imperfect in his right ear. About six months before admission, he felt something pressing against the back part of the cavity of the mouth, and his sense of smell became diminished. This gradually increased, the tumour pressing down the soft palate, and interfering with deglutition and respiration.

At the period of admission he was extremely weak and emaciated, and his appetite, which had been always good, was quite gone. Whenever he attempted to swallow, he threw back his head, and let the fluid pass down very slowly. His respiration was hurried, and his voice hoarse, and so indistinct, that it was impossible to understand him. He had a constant flow of saliva from the mouth, and his countenance was strongly expressive of great suffering. He was admitted into hospital on Monday the 9th of March, and died on the following Wednesday. (*Museum Richmond Hospital.*)

3. *Traumatic Rupture of the Liver.*—Dr. Parratt presented the liver of an artillery man who was killed in the Park the day before, in consequence of the wheel of a gun carriage having passed over his body. The man survived the accident only half an hour. Dr. Parratt found him lying on the ground, pulseless, pale, and with an extremely anxious countenance. He complained in a feeble voice, of severe pain in the right side, and intense thirst. Some water was given to him, and he was then lifted gently on a car and brought to hospital. He was there seized with vomiting and jactitation; his whole frame became expressive of extreme agony; the angles of the mouth were drawn down; the

teeth clenched, and he expired in the course of a few minutes. He was sitting on the shaft of the waggon when the accident happened, and fell in attempting to catch his cap, when the wheel passed over his chest. Five of his ribs were broken, but the laceration of the liver was not caused by any of the spiculæ of bone; it was entirely the result of the force applied over that organ by the passage of the wheel. The liver was ruptured in various directions, and its large vessels torn; the cavity of the abdomen was filled with blood, the quantity effused could not be less than six or seven pints. The stomach was filled with half-digested food.

4. *Traumatic Emphysema, without Laceration of the Pleura, or Fracture of the Ribs.*—Mr. Smith said, the lungs before him were taken from a man over whose body the Enniskillen mail had passed at some short distance from Dublin. He was a man of large size. On admission into the Richmond Hospital he had intense dyspnœa, with the usual symptoms which accompany internal hæmorrhage; there was also slight cough, but he did not spit any blood. All the muscles of the chest, abdomen, and neck were thrown into the most violent action, and the dyspnœa under which he laboured was frightful. His pulse was about 96, weak, and failing; his face pale and livid; his extremities cold. At the root of the neck there was a large tumour, which was found to be produced by effusion of air into the cellular substance, constituting subcutaneous emphysema; the whole of the anterior, lateral, and posterior parts of the chest became subsequently inflated. He died about three-quarters of an hour after admission. On opening the right cavity of the chest, Mr. Smith could not see the lung at first; it lay along the side of the spinal column, and appeared to be quite as small as it is occasionally observed in cases of compression from old empyema. The compression in this instance was caused by an enormous quantity of air in the cavity of the pleura. There was a large quantity of extravasated blood lying about the roots of the great vessels and primary branches of the aorta. There were three different lacerations in the substance of the lung on the right side, but not on the left; the lung of the left side presenting nothing except a considerable degree of sanguineous engorgement. The pleuræ on both sides were quite uninjured, and there was no fracture of the ribs. The chief alterations consequent on the injury were emphysema of the neck and trunk, effusion of air into the right cavity of the pleura, causing very remarkable compression of the lung, laceration of the right lung, with extravasation of blood about the roots of the great vessels, and congestion of the left lung. The most singular circumstance connected with the case was the occurrence of such extensive laceration of the lung without rupture of the pleura, or fracture of the ribs. These parts were examined with great care, but no solution of continuity could be discovered. The effused air had first passed into the mediastinum, and subsequently into the cellular tissue of the neck and trunk. This was the fourth case of rupture of the lung, without fracture of the rib, which Mr. Smith had wit-

nessed. The first case was that of a woman who had met with a severe accident, and in whom this condition was discovered after death. The next case was that of a dog which was killed near the Richmond Hospital, by a car passing over its body. Mr. Smith examined the body shortly after the accident, and found that although there was not a single rib fractured, the pericardium was torn in various directions, and the lung extensively lacerated. The last case was that of a man brought into Jervis-street Hospital, who had general emphysema and rupture of the lung, without any injury of the ribs or pleura. Cases of this description bore a considerable degree of resemblance to laceration of the brain after concussion, without fracture of the cranial bones.

5. *Scirrhous Tumour compressing the Parotid Gland.*—Mr. Adams said, that scirrhus of the parotid gland had been mentioned by various writers, as a disease of no unfrequent occurrence. Yet for himself he would say, that he had never seen it, nor had he known any one who had seen it. He had frequently sought for it, but had never met with an instance. He was aware that some cases had been published, in which the parotid gland was found to be secondarily involved; but he was not aware of any instance in which the disease had commenced in the gland itself. Mr. Carmichael had some time ago operated on a case, in which the parotid was secondarily engaged, and Mr. Adams believed that almost all the cases are of this description. Beclard, however, has stated, that he has removed a tumour in which the parotid was primarily involved. The specimen which he was about to exhibit was a recent one, taken from the body of a man who had died of tetanus in the Richmond Hospital. He had brought it forward for the purpose of shewing the manner in which the tumour originated, its situation, and mode of progress. On removing the parts after death, the tumour was found to be of a true scirrhous nature, not involving the gland itself, but lying on its surface, and partly imbedded in it. It was in fact a scirrhous tumour not of, but in or upon the parotid gland, and might be extirpated without removing the latter. Mr. Adams said he had a preparation of a tumour of this description, which had been removed by the late Dr. Macdowell. He also had a drawing taken from a man who was operated on in Jervis-street Hospital. In this case the disease was said to be true scirrhus of the gland, and there was paralysis of the portio dura after the operation. The tumour itself was evidently carcinomatous, and contained a quantity of coffee-grounds fluid in its interior. Mr. Adams said, that before he concluded he would exhibit a cast to shew the appearance of a tumour of the nature he had described; it lay on the surface of the parotid gland, and had not arrived at the carcinomatous state. When an operation is performed for the extirpation of one of these tumours in the advanced stage, the depth of the incisions, and of the cavity left behind, as well as the appearance of the parts, leads to the belief, that the parotid gland had been removed. The real state of the case is, that the parotid gland is either partially or wholly removed by pres-

sure of the tumour and absorption, and not by the knife. Where the parotid itself is removed, the amount of hæmorrhage, and the injury done to the portio dura, renders the nature of the operation sufficiently evident. In a case operated on by Mr. Adams, he had taken a cast of the face six years after the operation, and found that there was no paralysis of the face. Mr. Wilmot, who assisted at the operation, thought he had removed the gland, but the fact was, that it had been removed by absorption. Mr. Carmichael said, that in the case in which he had operated, the parotid gland was removed, for the man had the paralysis of the face.

Sixteenth Meeting, March 21.

Professor GRAVES in the Chair.

1. *Softening of both Lobes of the Cerebellum.*—Mr. Ferrall exhibited a very accurate drawing of softening of the cerebellum. The subject of the case was a young woman, æt. 26, unmarried, and who enjoyed perfect health until three months before her death, when she was attacked with intense headach, not referred to any particular part of the head, and accompanied by sickness of the stomach in the morning. When she applied at St. Vincent's Hospital, she was almost completely amaurotic, and had double vision, which continued until her death: her headach was intense, but intermitting: she suffered greatly from globus hystericus. Previous to her admission into the hospital, she had undergone a course of mercury; and while in hospital, she was again salivated with temporary benefit: under the use of mercury her pulse fell from about 90 to 72; and for some time her febrile symptoms underwent a marked improvement. She had no paralysis during the whole course of the disease; the prominent symptoms were intense, but not constant headach, globus hystericus, double vision, amaurosis, and strabismus. She died rather suddenly about three months after the first appearance of her symptoms. Upon examination after death, the anatomical characters of chronic inflammation of the membranes of the brain were found, *and both lobes of the cerebellum were softened* nearly throughout their whole extent, and of a pale rose colour. Mr. Ferrall remarked, that cases of this description were extremely rare; Andral had never seen any instance of softening of both lobes of the cerebellum, but had collected from the public journals and other sources, the details of three cases in which both sides were engaged: one of these occurred in a child, in whom the chief symptoms were epileptic fits and priapism. Mr. Ferrall alluded to a case which occurred in the private practice of Mr. Carmichael, and published in Dr. Stokes's work on Diseases of the Chest; in this the softening engaged not only both lobes of the cerebellum; but also both hemispheres of the brain. (*Museum, St. Vincent's Hospital.*)

2. *Perforation of the Lung; Pneumothorax without Empyema.*—Dr. Stokes exhibited the recent parts in this case, which was that of a gentleman who for a considerable time had laboured under the usual group of symptoms characteristic of chronic phthisis.

Dr. Stokes also exhibited a drawing of a case of pneumothorax, from perforation of the lung, which contrasted in a very striking manner with the preparation which he had just exhibited, *in which there was no trace of pleural inflammation.* The drawing shewed the whole surface of the pleura covered with a thick coating of lymph. He also shewed another drawing of a case of pneumothorax occurring in phthisis, in which the entire surface of both layers of the pleura was covered with lymph.

Dr. Stokes saw him for the first time about six months ago, and found him labouring under symptoms of advanced phthisis. He had severe cough, and on examination, a small tubercular cavity was discovered in the antero-superior portion of the right lung. He was a man of tall stature, dark complexion and hair, and of a phlegmatic and bilious temperament. His disease went on in the ordinary way until Tuesday, the 17th of March. On that night he experienced a sudden aggravation of all his symptoms, and when Dr. Stokes saw him next morning, his countenance was remarkably anxious, and he was labouring under continued and intense dyspnœa. He said something had occurred during the night which he could not explain; that he knew well his danger was greatly increased. When cases of sudden aggravation of symptoms occur under such circumstances, they usually give rise to a suspicion of perforation of the lung or pleuritis, or both, and under this impression, Dr. Stokes asked him if he felt a sudden and violent pain in his side shortly after the attack. He said he had not. He was then requested to describe his sensations. He said, at the time he became worse, he felt as if air was creeping in gradually between his lung and his chest, and that it appeared to accumulate gradually in this situation, pressing on his lung, and causing great distress of breathing. [Dr. Stokes asked if the sensation of air passing in the direction he had described still existed. He said it did, and that it was increasing. The phenomena which were present on that day were these:—over the whole of the left lung the sound was clear on percussion, and the respiration puerile; this had not been the case before. In the next place, the sound was clear over the right lung, and respiration was still audible at the upper part, though very feeble; below it was quite indistinct. A metallic bourdonnement, but not amounting to tintement metallique, could be heard also over the right side. There was no dulness whatever on percussion, and there was no pain. Under such circumstances, the only diagnosis which could be made was, that rupture of the lung had taken place, and that air was effused into the pleural cavity, but that there was no pleuritis. On Thursday his breathing became easier and his voice much stronger than before, but he was evidently sinking, and died on the following day. Previous to opening the chest, Mr. Smith, who examined the body, was anxious to ascertain if there was air in the cavity of the pleura; and on puncturing one of the intercostal spaces, a large quantity of air rushed out, strongly impregnated with the smell of sulphuretted hydrogen. On opening the chest, the whole surface of the lung was

found to be perfectly dry, and there was no fluid in the cavity of the pleura. It was, in fact, pneumothorax without empyema, a circumstance perfectly novel in such cases. Dr. Stokes said he was aware that many persons in the room had opportunities of seeing examples of pneumothorax in phthisis, but the specimen which he had brought forward was new; it was pneumothorax without inflammation of the pleura. The pulmonary pleura had been removed, with the portion of costal pleura corresponding to the seat of the rupture, and if examined they would not be found to present any trace of inflammation. There were some adhesions between them, but these were evidently of long standing, and the result of former disease; there was no vascularity, no effusion of lymph or serum. With respect to the source from which the air had been derived, it seemed to be from the rupture of one of those subpleural vesicles which occur so commonly in the lower lobes of the lungs of persons who have been subject to chronic cough. The debris of this vesicle was to be seen in a very satisfactory manner in the preparation, and the valvular opening by which the air had escaped into the cavity of the pleura. In ordinary cases of pneumothorax occurring in phthisis, and where perforation of the lung is the result of tubercular abscess, the mischief is double; there is effusion of air and pus into the cavity of the pleura, followed by inflammation; in other words, there is pneumothorax with empyema. In the case under consideration, there was merely effusion of air, and the result was simple pneumothorax. The physical signs were, therefore, merely those of pneumothorax. There was another point in the case, to which Dr. Stokes begged to direct attention. Some time ago, he had submitted to the notice of the Society a case in illustration of the fact, that the rapidity of death, and the amount of suffering, in cases of perforation of the lung, are modified by the nature of the opening. Where the opening is free, and the air can pass in and out of the cavity of the pleura with facility, the patient's sufferings are less, and life is protracted much longer than where the opening is valvular, and the effused air, after getting into the pleural cavity, cannot again pass into the lung. The case before him afforded a good illustration of this. The opening was quite valvular, and this would account for the intense dyspnœa, as well as the rapid death of the patient. Another circumstance worthy of attention in this case, was the presence of sulphuretted hydrogen in the effused air. Itard gives two instances of this kind. The last point to which he would direct attention, was one connected with diagnosis. On examining the left lung, it was found to be, like the right, filled with tubercles, a condition which had been suspected, but not distinctly ascertained during life, owing to the presence of intense puerile respiration. Where this exists, it masks and obscures, in a very remarkable manner, the physical signs of tubercle. A case of this description had occurred some time previously. It was a case of empyema, with intense puerile respiration in the opposite side. It was thought at the time that the lung on that side was healthy, but on the death of the patient, which occurred some time afterwards, an old tu-

bercular abscess was found in the substance of the lung. In the case he had brought before the Society, there was a considerable number of tubercles, particularly in the upper part of the left lung, but respiration was so intensely puerile, that all other phenomena were completely obscured. Hence, in cases of pneumothorax, or empyema, the respiration in the opposite lung is no criterion of its actual condition, particularly if it be puerile. The case also went to confirm an observation of Dr. Graves's, that in certain cases, we cannot determine the amount of disease by percussion; for although there was in this instance a slight degree of dulness, it was quite insufficient to lead to a correct diagnosis.

3. *Flaccid State of the Heart in Fever.*—Dr. Graves said, he believed the Society was aware, that his colleague, Dr. Stokes, had taken up the consideration of a very interesting point connected with the pathology of typhus; he alluded to the observation, that in certain cases of typhus, the sounds of the heart are greatly diminished, so that one or both become more or less indistinct. On this subject Dr. Stokes had published a memoir in the Dublin Medical Journal, with which he supposed all the members of the Society were familiar, and had stated that in such cases there is a specific change or softening of the heart's substance. This was a question of great importance, and Dr. Graves considered, that all those who had opportunities were bound to bring forward any specimens likely to throw any additional light upon it.

The heart before him was not taken from a case of typhus, strictly so called; at least it was not taken from a case of typhus with maculæ, and it would be proper to bear this in mind. The patient laboured under fever, but there were no maculæ present. He was admitted into the Meath Hospital on the fourteenth day of his illness. It would be unnecessary to give any detail of the symptoms, further than to state, that on admission his pulse was strong and dicrotous, continued so for some days, and did not lose this character until five or six days before death. He died on the thirty-third day of fever. During the course of the disease, the chief symptoms were a dry tongue, dicrotous pulse, general bronchitis, with congestion of the lung, and diarrhœa. Some of the gentlemen who watched the case observed, that one of the sounds of the heart was inaudible. On this point, however, Dr. Graves could not satisfy himself, for the bronchial rales were so loud, as to mask all other sounds. Under these circumstances, he could not affirm any thing positively as to the sounds of the heart, and merely brought it forward as the heart of a person who had died on the thirty-third day of fever, of a typhoid character without maculæ. It would be perceived that there was a general flaccidity of the heart, but Dr. Graves did not think there was any specific softening of its substance.

4. *Cancer of the Pylorus, Tubercular Disease of the Lungs and Mesenteric Glands.*—Mr. Smith presented the recent parts in this case, one of the lungs contained a tubercular cavity, which had evidently existed for a considerable time, and several scattered groups

of tubercles were found in both lungs. Along the lesser curvature of the stomach, and completely encircling the pylorus, there was a large cancerous ulcer, the surface and circumference of which presented numerous fungous growths, the mesenteric glands were much enlarged, and filled with a white, cheesy matter, of a scrofulous character. The patient, a man aged 56, had been ill for upwards of twelve months, but had been but a short time in hospital; his chief symptoms were cough, with some dyspnœa and acceleration of the pulse; vomiting, and constant pain in the stomach: he was much emaciated, and died exhausted by diarrhœa.

Mr. Smith said he only brought forward the case, as an example of the co-existence of cancer of the stomach with scrofulous tubercles of the lungs and mesenteric glands. Similar cases have been mentioned by Bayle.

4. *Acute Arthritis Genu, with acute Osteitis, supervening upon Chronic Rheumatic Arthritis.*—Mr. Smith also presented to the meeting the knee joint of a woman, æt. 56, who had long suffered from chronic rheumatic arthritis of the knee joint; she died of an acute attack of inflammation of the right knee joint, which presented the external appearances of chronic rheumatism in a somewhat advanced stage; moreover, it was greatly swollen, and when the synovial membrane was opened, purulent matter escaped: organizable lymph lined this membrane, and the cartilages generally, these structures were, however, in some places removed altogether, their place being supplied by a porcellaneous deposit grooved in the line of flexion and extension. From the condyles of the tibia, the cartilage was raised up from the bone, apparently stretched out and converted into a thin, flexible, soft, yellow membrane. The interior of the head of the tibia, its cancellated tissue, the medullary membrane of these cancelli, and of the medullary canal itself, all presented evidence of their having been the seat of acute inflammation. Purulent matter was diffused through the cancelli of the tibia from the knee joint for one-third of its extent. The anatomical characters of a true acute osteitis of the bones entering into the formation of the knee-joint, co-existed in an advanced stage with those of acute inflammation of all the other structures of the articulation. (*Museum, Richmond Hospital.*)

Seventeenth Meeting, March 28.

Professor Graves in the Chair.

1. *Lymph from the Bronchial Tubes.*—Mr. Smythe said that at a former meeting of the Society he had exhibited some specimens of tubular lymph, which had been expectorated in a case of chronic phthisis. On the present occasion he would beg leave to exhibit a very remarkable specimen of the same description, which appeared to be an exact mould of the left bronchus. On its anterior part were to be distinctly observed the marks of the bronchial rings, proving how completely it filled the tube. The bronchial polypus, as Mr. Smythe

observed, was hollow, admitted the passage of a probe, and was manifestly a cast of the *left bronchus*, for it divided into only *two* smaller branches or tubes. Previous to expulsion the symptoms were, great rapidity of pulse and respiration, distressing short dry cough, and orthopnœa. Since the concretion has come away, the patient has been quite easy and comfortable. The treatment consisted in small doses of blue pill, ipecacuanha, and extract of hyoscyamus with active counter-irritation.

2. *Extensive Dilatation of the Bronchial Tubes.*—Dr. Law observed, that any one acquainted with stethoscopic investigations knew how difficult it was in many instances to distinguish dilatation of the bronchi from tubercular cavities. They resemble one another very closely in their constitutional symptoms, and in their physical signs, and even the phenomena observed after death have led several persons to look upon cases of dilated bronchi as phthisical cavities in process of cure. The specimen he was about to submit to the Society was taken from the body of a sailor, who had been admitted into Sir Patrick Dun's Hospital in last October. The account which he gave of himself was, that about a year before, after exposure to cold, he was attacked with pain in the left side, cough, and viscid expectoration. During this period he had been engaged in the duties of his occupation in various parts, but had been obliged to go into hospital in Sicily, and subsequently in London. During the whole time his cough had been incessant and harassing, subject to occasional exacerbations. Shortly before admission he had been labouring under hæmoptysis. On examination Dr. Law found that his left side presented marks of extensive disease: his condition at this period was, that in addition to the constitutional symptoms usually attendant on loss of blood, there was extreme dulness of the left side, from the clavicle down to the mammary region; at the posterior part of the chest on the same side there was also extensive dulness; corresponding to the dulness anteriorly there was cavernous respiration, gargouillement, and pectoriloquy. For some time after the patient's admission, the chief point of importance was the hæmoptysis, but as soon as the symptoms of pulmonary hæmorrhage subsided, those which seemed to be indicative of the existence of a cavity in the lung became more manifest. The man had, in addition to the physical signs already described, cough with purulent expectoration, emaciation, slight perspirations at night, and increased frequency of pulse. He went on during the months of November, December, and January, without any material change, the dulness still continuing, with bronchitic cough, purulent expectoration, pectoriloquy, gargouillement, and cavernous respiration, but without any apparent diminution in size of the affected side, or any flattening of the subclavicular region. Dr. Law perceiving that the case was a peculiar one, requested several gentlemen intimately acquainted with thoracic diseases to visit him. His own opinion was, that the case was originally one of pleuro-pneumonia, and he thought that there might have been some effusion into the cavity of the pleura, and that this

had left behind it a coating of lymph. He also suspected that the substance of the lung itself had undergone a species of change not unusual after chronic pneumonia, viz., the development of tubercles, followed by the formation of tubercular cavities. This opinion was entertained by several persons who saw the case. Dr. Greene, who visited the patient on one occasion, was struck with the distinctness of the pectoriloquy, cavernous respiration, and gargouillement; and thought there was some flattening of the affected side, but no obvious depression below the clavicle. He was also seen by Dr. Stokes, who thought there were anfractuous cavities in the lung, but observed that there was no apparent diminution in size of the affected side. Things went on in this way until the 24th of February, when the man was attacked with severe and weakening diarrhœa. He also complained of pain in the groin, attended with tenderness on pressure, and evident tumefaction of the upper and anterior part of the thigh. This was followed by a good deal of swelling and local tenderness, which however yielded in a great measure to leeches. He then became dropsical, had anasarcous swelling of the feet, hands, and face, and was attacked with severe diarrhœa, by which he was very soon run down. Two days before his death he complained of severe pain in his left side. Dr. Law said, he had forgotten to observe, that he had not been able to detect any affection of the right lung, and that the patient during his illness lay constantly on the affected side. He would now beg leave to exhibit the left lung, and would observe, that a slight inspection of it would show how easy it was to confound cases of this kind with cases of ordinary phthisis; indeed any one who examined the specimen, and contrasted it with one of phthisis, would be struck with the resemblance between them. The plate which he exhibited was one of Cruveilhier's, and his observation on it was, that it was a representation of phthisis in process of cure. The similarity between it and the specimen exhibited by Dr. Law, was very remarkable. In Dr. Law's case there was no trace of tubercles in the left lung. In the right there were a few scattered through the substance of the organ near its apex. The chief point of interest attached to the left lung was the presence of dilated bronchi, of which a number might be seen at the upper part of the lung, with the bronchial tubes entering into them by trumpet mouths. The specimen was also calculated to show the manner in which the disease commenced, and afforded an excellent illustration of the views put forward by Dr. Corrigan on the subject. The whole substance of the lung in the vicinity of the dilated bronchi, was thickened and indurated, so as to resemble that of a carnified lung, and there was no trace of the vesicular structure left. In fact the vesicular structure seemed to be quite obliterated, and the lung no longer permeable to air. Dr. Law observed, that in cases of this description, the thickening and induration of the substance of the lung, which was the result of chronic pneumonia, proved in its turn to be the cause of dilatation of the bronchial tubes. Thus, while the deposition of lymph in the air-cells and pulmonary tissue produces obliteration of the ve-

sicular structure, nature attempts to remedy the defect by opening and dilating the bronchial tubes. The other lung shewed the disease in the early or incipient stage. Dr. Law stated, that some months before he had met with a similar specimen of dilatation of the bronchial tubes. He begged to observe in conclusion, how much the physical signs and symptoms during life, as well as the phenomena after death, showed that dilatation of the bronchial tubes might in some cases, and under certain circumstances, be mistaken for ordinary phthisis. The intestines of the same patient furnished very remarkable examples of two other pathological changes, namely, emphysema of the submucous tissue, and follicular ulceration of the mucous coat of the ileum and colon. There was also adhesion of the free portion of the cæcum to the walls of the abdomen, owing to the presence of an ulcer of the vermiform appendix, which had engaged the peritoneum in its vicinity. The inflammatory process had also extended to the abdominal parietes in the neighbourhood, causing a certain degree of swelling at the groin. The patient had also Bright's disease of the kidney, with albuminous urine. (*Museum, Sir Patrick Dun's Hospital.*)

3. *Disease of the Kidney; Albuminous Diabetes.*—Dr. Graves begged to submit a specimen of diseased kidney, and to offer a few remarks which it had suggested. The specimen was taken from the body of a man, named Hugh Dalton, who was admitted into the Meath Hospital on the first of January. He was a person of irregular habits, and had been ill for a long time. He stated that he had been subject to cough and distress of breathing, with various gastric and abdominal symptoms. At the time of his admission he was passing every day about eight or nine pints of urine, of the specific gravity of 1010. On the second of March, his urine was of the specific gravity 1009, acid, and loaded with albumen, and when discharged, a cloud of purulent matter was observed in it.

Dr. Graves exhibited the kidneys, the cortical part of which was white and granular, and said he wished to make a few observations, as to the question how far this condition was connected with albuminous urine. He should observe, that in this instance the dropsy had been preceded by albuminous diabetes, which had been checked by warm baths and opium, and had nearly disappeared when symptoms of general anasarca came on. For the space of three weeks the urine was loaded with albumen, and when this condition had been altered by treatment, general dropsy supervened. A question then arose, whether that state of the kidney termed, "Bright's kidney" was the cause of albuminous urine, or whether it was to be looked upon in an opposite point of view, and regarded as the consequence. Dr. Graves said he was inclined to adopt the latter opinion for various reasons. He had seen so many persons cured of albuminous urine under various circumstances, that he should hesitate in ascribing this condition to a permanently disorganized state of the kidneys. A remarkable instance of this occurred in the person of Staff Surgeon Finnie, Surgeon to the Military School at the Park; about six months

ago he was attacked with pleuro-pneumonia of the left lung, of a very severe character, and speedily followed by anasarca. About the time the anasarca was making its appearance, his urine became highly albuminous, and continued so for nearly six weeks. About the time when the pectoral symptoms were about to yield to treatment, the anasarca and ascites began to disappear, and at the same time the urine began to lose its albuminous character. In this case the pectoral symptoms were so severe, that for some time Dr. Graves indulged but faint hopes of his recovery. The antiphlogistic treatment pushed to its furthest extent, mercury to salivation, and repeated and powerful vesication, succeeded in removing the disease, and with it all trace of albumen in the urine. The case occurred about six months ago, and the gentleman has remained quite well ever since, and without manifesting any symptoms whatever of a return to the albuminous diathesis.

It should be borne in mind, that in the dropsical diathesis there is a tendency to the secretion of water loaded with albumen, not only in the kidney, but also into the cellular membrane and serous cavities. It is rather difficult to conceive, that when the general system takes on this diseased action, the kidneys should be exempt, or that the kidneys should become affected with organic disease, in order to pour out albumen, while other tissues and organs can assume the same function without any structural alteration. Why should the kidneys alone become changed, while other parts retain their organic constitution? Dr. Graves said that he thought a few observations on this point would not be out of place. The Profession were in general aware, that modern discoveries have shown that the cortical portion of the kidney consists of an immense number of very minute tubes convoluted on each other, blending, and lying in apposition with the ultimate ramifications of the arterial capillaries, through the parietes of which the urine is separated from the blood, making its first appearance in the minute tubes of the cortical substance. Now what are the chief constituents of urine? water, salts, and various acids, as the phosphoric, nitric, &c. Now if the nascent principles of the urine are secreted into these minute tubes in company with nascent albumen, the latter will be inevitably coagulated by some of the above mentioned acids, and if this process be often and continually repeated, it is not surely a very improbable result, that these tubes may ultimately become filled with coagulated albumen, a fact observed by Valentin. In some experiments made by Mr. Moore on this patient's urine, it appeared that the puriform matter it contained became extremely tenacious and viscid when acted on by a certain portion of caustic alkali, a fact illustrative of the origin of that peculiarly viscid, puriform mucus, which we so often meet with in cases where the secretion from the surface of the bladder is at once puriform and alkaline.

Dr. Graves said, that there were two circumstances more, connected with this case, which were deserving of notice as showing how slow we should be in attempting to explain some symptoms. In exhibiting

ing the lung of the same patient he would observe, that the man had laboured under intense but chronic bronchitis, and a carnified but not hepatized state of the lung, the condition of which would strike any person who had examined it, and yet the man's chest was quite clear on percussion up to the last moment. He would also remark, that during the last four or five days of life, respiration had undergone an extraordinary change. On the 21st and 22nd of March, respiration was found to proceed in a very unusual manner, the patient breathing only six times in a minute; previous to this his respirations were thirty in a minute. But one of the most extraordinary circumstances connected with it, was the manner in which respiration was performed, each inspiration being made suddenly and in snatches, so as to occupy only two seconds, while each expiration was made calmly and slowly, and occupied eight seconds. This condition was observed by several persons, and continued for about four days. It was singular, that during this time, and while respiration was carried on so irregularly, the action of the heart was perfectly natural, its sounds normal, and its rhythm perfect. The heart beat quietly and steadily at 70, while the respiration was thirty as well as when it was only six in a minute. There was nothing in the lung to account for the anomaly, and the only hypothesis that could be advanced on the subject was, that it was owing to some unknown derangement of nervous function. For a few days also before death, the man had been affected with a kind of chorea of the face and upper extremities. Dr. Graves said he had brought the brain with him for inspection, and any one who examined it would perceive that there was nothing in it to account for the symptom described. He had also brought the bladder of the same patient, to show that there was nothing in it to account for the puriform matter observed in the urine.

4. *Lung in Hooping-Cough.*—Dr. Lees exhibited the lung of a child who had died of hooping-cough. About ten months ago the child had been under the care of Dr. Croker, for repeated attacks of convulsions, and symptoms resembling those of hydrocephalus. From this attack it recovered, and went on tolerably well until last November, when it was seized with symptoms of bronchitis. It was just beginning to recover from this also, when it was attacked about six weeks ago with hooping-cough. About ten days since it became evidently worse, and died on the 26th of March. Dr. Lees exhibited the lungs, and observed, that the right was that which appeared to be chiefly engaged. It had occupied more than its natural share of the cavity of the thorax, and had pushed the opposite lung towards the left side. It exhibited subpleural vesicles, and other evidences of emphysema; but the most remarkable circumstance connected with it was the existence of pneumonic inflammation affecting not the central portion of the lung, but merely the margins in which the induration of the pulmonary tissue was obvious.

5. *Communication between the Aorta and Pulmonary Artery.*—Mr. Smith shewed a preparation taken from the body of a child nine years old, who had died two days before in one of the hospitals

attached to the House of Industry. The history of the case was necessarily imperfect, owing to the condition of the child, as well as the absence of persons who could give a clear account of it. It was stated, that it had been attacked some time before with symptoms of scarlatina, but without sore throat, and had gone through the disease pretty well. It was afterwards sent to the country, and remained there for six weeks, during which it had been subjected to bad treatment, being obliged to sleep on a cold, damp floor. It was brought into hospital, labouring under anasarca, in which the feet, hands, and eyelids were chiefly engaged. There was also pain of the right side, which was dull on percussion throughout its whole extent. The pulse was extremely quick and small, respiration hurried and laborious. The child died on the third day after admission, with symptoms of coma. On dissection the brain was found to be healthy, with the exception of some slight effusion into the ventricles. Mr. Smith said he had brought the case forward as an example of almost universal tubercular deposition. The mesenteric glands were all filled with tubercular matter, and there were deposits of the same kind in the subserous tissue. The omentum presented a very peculiar appearance; it was the seat of general tubercular disease, and had shrunk up into a hard and indurated mass. There were tubercles also on the lining membrane of the heart and pericardium, which presented the same rough feel as the intestines. The pleura presented also a very remarkable instance of it, both where it covers the lungs, as well as where it was reflected over the diaphragm. The under surface of the diaphragm was also full of tubercles and adhered to the convex surface of the liver; there were also several in the subserous tissue of the peritoneum covering the stomach. The lungs were comparatively free from disease, both being free from tubercles, with the exception of a few in the lower lobe of the right lung. Mr. Smith said, the case was remarkable in a double point of view, the patient not having manifested any of the usual symptoms of tubercular disease, and the lungs being, comparatively speaking, exempt. The condition of the omentum was also worthy of notice. Mr. Smith observed in conclusion, that the tubercular deposition seemed to be quite independent of inflammatory action, as he could not detect the slightest trace of inflammation in the peritoneum, or in any of the tissues in the vicinity of which they had been located.

Eighteenth Meeting, April 5.

Professor Harrison in the Chair.

1. *Hepatic Abscess.*—Dr. Hutton communicated a case of abscess of the liver, which presented many symptoms in common with empyema of the right side. The subject was a labourer, about twenty-six years of age, who was admitted into the Richmond Hospital on the 9th of January, 1840. On admission he stated, that about nine weeks previously, after exposure to wet and cold, he was seized with shivering and other symptoms of fever, followed by pain in the right shoulder, and in the right side, extending from the hypochondrium

to the crest of the ilium. He also felt pain and oppression when lying on the left side. At the commencement of the attack he had clay-coloured alvine discharges, with turbid, high-coloured urine, and some time afterwards was attacked with dysenteric symptoms. His chief symptoms on admission were pain in the right hypochondrium, extending to the crest of the ilium, greatly increased by lying on the left side, and accompanied by a sensation of weight. He also suffered pain from lying on the right side, and on this account remained almost constantly in the supine posture. In addition to these symptoms, he had harassing cough, considerable dyspnœa, diarrhœa, and hectic. Shortly after admission the chest was examined, and it was found, that from the sixth rib downwards, there was complete dulness on percussion, with total absence of the respiratory murmur to the same extent. During the progress of the case, the dulness and nullity of respiration extended upwards as high as the fourth rib; beyond this the supero-anterior portion of the chest was clear on percussion, and respiration was pure, becoming more feeble as the observer examined downwards. On the left side the respiration was clear and even puerile, and here the chest, both anteriorly and posteriorly, sounded well on percussion. After some time, the lower part of the right side of the chest became evidently larger than the opposite one, and the intercostal spaces, which in the commencement had been tolerably well marked, became obliterated from the fourth rib down to the base of the thorax. He had alluded to this point more particularly, for it has been mentioned in Dr. Stokes's work on Diseases of the Chest, that in cases of hepatic enlargement, although there is dulness over the lower part of the chest, the intercostal spaces are not obliterated. In this instance there could be no doubt of the fact. This circumstance, however, did not detract from the value of Dr. Stokes's observation, or exclude it as a means of diagnosis, for on examining the preparation, it would be seen that the case was a very peculiar one. The hepatic abscess was in such close approximation to the parietes of the chest, as to produce in a very remarkable manner all the ordinary phenomena of empyema, viz., dulness on percussion, and absence of the respiratory murmur, extending upwards, and not altered by a deep inspiration; distinct obliteration of the intercostal spaces, with cough, emaciation, and hectic. Dr. Hutton made an eschar over the most projecting part of the tumour, with the view of securing adhesion, and finding that the matter was not coming forward, made a puncture with a grooved needle. He then enlarged the opening, and gave exit to a pint of semipurulent fluid of a thin sero-sanguineous character, and mixed with shreds of lymph. This afforded great relief to the patient. On the third day after the opening was made, matter of a different character came away; it was thick, fetid, and tinged with blood, like the matter of an hepatic abscess; so much so, that Dr. Hutton expressed his opinion that it came from the liver, although he was at first impressed with the idea that it was a case of empyema. This impression had been strengthened by the fact, that he could pass a full sized probe tranversely across the chest, and to a considerable distance

upwards in the vertical direction, so as to lead him to the conclusion, that it was in the cavity of the pleura. It would be also necessary to bear in mind, that the chief symptoms present were in favour of this supposition. The man had pain in the side, cough, dyspnœa, dulness on percussion, and absence of the respiratory murmur as high as the sixth rib, and obliteration of the intercostal spaces. Again, after the operation, there was returning clearness and increase of the respiratory murmur above, extending downwards. All these circumstances tended to throw a considerable degree of obscurity on the diagnosis. The relief obtained by giving exit to the matter was but of short duration; the dysenteric symptoms continued without any alleviation, and the man sunk from exhaustion. On dissection the following state of parts was discovered. On opening the chest on the right side, the lung was found to be healthy, with the exception of its lower lobe, which presented traces of pneumonia; in this situation also there were some adhesions, apparently of a recent date. The middle and upper lobes were quite healthy and free from adhesions. There was no fluid in the cavity of the pleura, but the thoracic surface of the diaphragm was found to be pushed up into the cavity of the chest, and adherent to the costal pleura anteriorly as high as the fourth intercostal space. This had been caused by an enormous abscess of the liver, the matter of which was quite superficial, and lying immediately under the peritoneal covering of the convex surface. On opening the abdomen, the abscess was found to occupy the right lobe of the liver, extending upwards in the direction of the diaphragm, and downwards and forwards as far as the fissure for the gall-bladder. It was of an enormous size, and had destroyed a considerable portion of the substance of the liver. (*Museum, Richmond Hospital.*)

2. *Obstruction of the Urethra, Dilatation of the Bladder and Ureters.*—Dr. Kennedy exhibited a preparation taken from the body of a new born infant, in which there was enormous distention of the bladder and ureters, with obstruction of the urethra. The ureters were distended to a very remarkable degree, being an inch in diameter, and exceedingly tortuous; the bladder greatly enlarged, and the left kidney dilated, the enlargement being produced by distention of its pelvis and infundibula, for the substance of the organ had been considerably diminished by absorption. On examining the fluid found in the bladder and ureters, it was found to contain no urea whatever; the urine had been submitted to a most careful analysis, but not a trace of urea could be detected. The case was interesting in many points of view, but in particular with reference to some important physiological questions connected with fœtal life, he alluded chiefly to the opinions of those who asserted, that the fœtus swallowed portions of the liquor amnii, and that the secretion of urine went on during fœtal life, somewhat in the same manner as after birth. The case which he had presented, seemed to confirm the idea, that the secretion of urine went on before birth, for if this were not the case, how could the condition of the bladder and ureters be explained? It was quite clear that the obstruction of the urethra had given rise to

accumulation of urine in the bladder, and that this had gone on so as to produce distention, not only of that organ, but also of the ureters and pelvis of the kidney. Again, as to the question of imbibition of nutriment by the fœtus, through the medium of the liquor amnii a very curious train of inquiry was suggested by the case under consideration. Are we to suppose that the fœtus takes in by the mouth, a fluid which is subsequently carried to the kidneys, eliminated by them as urine, carried into the liquor amnii, and again swallowed as before. These were questions of considerable interest.

4. *Cauliflower Excrescence of the Ureters.*—Dr. Kennedy also exhibited a specimen of what has been termed cauliflower excrescence of the uterus. The preparation shewed the engagement of the vaginal structure in a very remarkable manner, a point which had not been noticed by writers on the subject. The vagina was not only engaged itself, but the ulcerative process had extended from it to the bladder, forming an opening in it, through which the urine was discharged. The disease had also attacked the mucous surface of the bladder to a considerable extent. Any person accustomed to the appearance of the mass during life would scarcely recognize it in the preparation. During life the cauliflower excrescence is elastic, tense, and solid, filling up the cavity of the pelvis, and rendering it a matter of difficulty to pass a finger into the uterus; but when it is examined after death, it is found, as has been remarked by authors, to consist of a shreddy, ragged substance, which has lost not only its elasticity and firmness, but also its bulk, being reduced to dimensions far below is original size. (*Museum, Lying-in Hospital.*)

5. *Varicose Aneurism; Communication between the Aorta and Pulmonary Artery.*—Mr. Smith said, the specimen he was about to present, afforded an example of a lesion he had never before witnessed. The case was that of a strong, muscular young man, about two-and-twenty years of age, who had always enjoyed perfect health until last Christmas, when he became subject to attacks of vertigo, with temporary loss of vision. He also felt a certain degree of weakness and unsteadiness in his gait, and after any excess could scarcely prevent himself from falling while walking in the streets. He was always pale and chilly, was frequently so weak as to be obliged to stop and lean on something for support; and on two occasions was carried home in a state of syncope. On admission into hospital, his symptoms were a pale and bloated appearance of the face, with general anasarca, constant sense of chilliness, great distress of breathing, orthopnœa, a variable and intermitting pulse, about 120, blueness of the lips, great anxiety, and frightful dreams. Over the whole cardiac region an intense fremissement was perceptible, and he had loud bruit de soufflêt, accompanying the first sound of the heart. The heart's action appeared strong and tumultuous, and there was dulness over the cardiac region from the second to the eighth rib. At the next examination, the fremissement was still more perceptible, owing chiefly to a diminution in the intensity of the bruit de soufflêt. The anasarca and orthopnœa continued, and the patient complained of nausea, vomiting,

headach, and fits of weakness terminating in complete syncope. He also had attacks like epileptic paroxysms, but did not froth from the mouth. As the case went on the fremissement increased. Some time afterwards, a distinct frottement was observed towards the right side of the heart; he had also tumultuous action and pain in the region of the heart, attended with frequent sense of suffocation and inability to lie on the right side; he was most anxious to rest, but was afraid to sleep, lest he should be suffocated: he complained of a fluttering sensation, as if, to use his own words, "there was a living bird in his chest;" the fremissement had increased in intensity to such a degree, that it could be felt through the bed-clothes. This, with the sense of suffocation, tumultuous action of the heart, nausea, syncope, and frightful dreams, reduced the unfortunate young man to a state of overwhelming despair. The pain in the heart still continued, the frottement was on the increase, but the bruit de soufflet was diminished. On the second of April, the action of the heart was still strong and tumultuous, but the pulse was weak, and the fremissement more distinct than ever. He had another paroxysm resembling epilepsy, and died on the following day: a few hours after death the body was opened by Mr. Smith. The auriculo-ventricular openings were sound, nor was there any alteration in the substance of the heart; there was no pericarditis; the left ventricle was dilated, but not hypertrophied; the right was perhaps a little thicker than natural, and both cavities were filled with dark fluid blood. On cutting into the pulmonary artery, Mr. Smith found a small opening in it, by which it communicated with the aorta close to its origin. The opening was apparently of long standing, for its edges were thickened and rounded off. Opposite the situation of the opening the aorta was dilated, and its lining membrane presented distinct traces of arteritis. Mr. Smith pointed out several distinct layers of lymph on the surface of the internal coat. The opening had most probably taken place about Christmas, when the patient first began to complain. Throughout the whole progress of the case the purring thrill was felt by the patient, and was to him one of the chief sources of suffering and anxiety. The rest of the examination showed a considerable degree of congestion in the posterior part of the lungs. The only morbid condition which could explain the frottement, was the pressure of a number of subpleural vesicles which were observed on the surface of the lower lobe of the left lung; vesicles of the same description were found on the surface of the right lung, but not in such considerable numbers. Mr. Smith said, that this phenomenon led him to make an observation on Dr. Stokes' remarks on Laennec's account of subpleural vesicles. Dr. Stokes says, that it is hard to conceive how these vesicles can give rise to such a sound, and that it has been attempted to be explained by supposing that there is a certain degree of dryness of the serous membrane over the vesicles. He is, however, more inclined to refer it to slight pleuritis, than to the existence of these vesicles. Mr. Smith said, he must agree with Dr. Stokes as to the necessity of observing great caution in making the diagno-

sis of cases attended with frottement, without other concurrent and explanatory phenomena, but he thought the case before him was quite sufficient to prove that frottement might exist without any thing like pleuritic inflammation. Mr. Smith said, that the case he had brought before the Society was one of varicose aneurism of a very rare description. A case has been published by Mr. Wells of rupture of the aorta into the pulmonary artery, in a gentleman aged 54, who while playing with his children, was suddenly seized with faintness and pain in the region of the heart; he had cough and hæmoptysis, was bathed in cold perspiration, and complained of an overpowering sense of chilliness. He died about nine hours from the commencement of the attack, having complained of a sense of heat in his chest shortly before death. A case has also been recorded by Mr. Symes, in which there was a communication between the abdominal aorta and the vena cava. (*Museum, Richmond Hospital.*)

5. *True Aneurism of the common Iliac Artery, opening into the common Iliac Vein.*—Mr. Adams exhibited a specimen which bore some resemblance to the case recorded by Mr. Symes. It was a fusiform dilatation of the common iliac artery, with a communication between it and the common iliac vein. It appeared to be of several years' standing, and to have caused the patient a good deal of distress. Sometime ago he fainted while walking, and was carried home in a state of syncope, and died shortly afterwards. He had for a long time before death noticed a tumour, attended with a purring sensation in the lower part of the abdomen on the right side. On examination after death, Mr. Adams discovered a fusiform dilatation of the common iliac artery, and on one side of it there was a small opening about the size of a goose quill, by which it communicated with the corresponding vein. Mr. Adams said he had examined the interior of the artery at the dilated portion, and could not find any solution of continuity in the lining membrane, except when the sac had opened into the iliac vein. He was therefore induced to look upon the preparation as being in the first instance a specimen of true fusiform aneurism, and secondly, as affording an instance of spontaneous varicose aneurism. (*Museum, Richmond School of Medicine.*)

UNIVERSITY OF DUBLIN.

Our attention has been directed to numerous applications made by graduates of arts in the University of Dublin, who are members of the medical profession, in order to obtain signatures to a petition for inducing the Board of Trinity College to rescind the regulations, whereby here, as in the University of *Cambridge*, the degree of Bachelor of Medicine is attainable on the superaddition of merely two years' study in arts to the usual medical education.

We have in a former number (for September, 1839) expressed our approbation of the measure adopted by the Board, not that we are in any way inclined to depreciate scientific or classical, as preliminary to

medical education; but because we consider that, occupied as the medical student is, the object is better attained by two years *bonâ fide* study in arts, than by requiring him, during each year of his medical education, to take a smattering of University learning. It is well known, that a mere degree in arts, unattended by the obtaining of collegiate honours, proves but little as to the scientific or classical attainments of the possessor, (nor is it indeed intended* to do so,) while it is a serious drawback on the exertions of many, who are inclined to devote themselves to medical studies.

As the law of the land and that of public opinion are at present, there is not a due *bonus* on obtaining medical degrees of a high order; we would, as a measure of reform, suggest, not an increase of College "standing," but, both in the University of Dublin and elsewhere, a much more extensive medical education,—medical *real* education,—than is demanded for any diploma in the empire. We do not think it unreasonable, that he, who is to have the charge of the health of her Majesty's subjects, should be required to prove, that he had studied—aye studied—not walked the wards in an hospital for five years. But suppose the Board, at our suggestion, were to require such a probation from the candidates for their medical degrees, how many would graduate? we recollect, that when, some years ago, attendance on midwifery lectures was added to the medical education in Trinity College, Dublin, there was a general threat that our candidates would flee to Scotland.

The Board of Trinity College, Dublin, are trustees, not only under this charter, but under a special Act of Parliament, for medical education. They must conform their regulations, not to the law of the land as they wish it to be, but the law as it *is*. Experience has proved, that if they impose too severe restrictions on graduation, and especially such as do nothing for *medical* qualification, students will flock to universities, where degrees can be got without arts at all; and which, although of an inferior grade, may answer the candidate's purpose "well enough." It was made a charge before the Parliamentary Committee some years ago, against the University of Oxford, and even against that of Cambridge, that they were unduly sedulous in matters of *form*, and remiss in matters of importance. It was urged that experience had shown, that neither of those Universities had been enabled, or enabled itself, to be constituted the medical graduating body of England, that but few persons took their degrees there, and that *another* (the present London) University was requisite.

Something of the kind was stated as to the Dublin University. The Board had, however, at that time commenced the salutary system of medical reform, on which they have since acted; and we think

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* A degree in arts is requisite by Act of Parliament, for a fellowship in the College of Physicians. The enactment has been the source of great inconvenience, rendering it necessary for the University to grant honorary degrees, under the sanction of the Attorney General for the time being.

that but for this, we should ere now have had another University in Dublin. The Provost and Senior Fellows were aware, that the Act of Parliament *does* (right or wrong) make a marked distinction between medical and other students; and that, therefore, if they continued to put them altogether on a level, and thus drove the former elsewhere to seek their degrees, they (the Board) would be left without defence against the charges of their accusers.

There are those who think, that under the Act, a medical student of Trinity College Dublin, has a right to graduate in medicine, without any study in arts whatever. Others conceive, that the remission, which the Act grants, goes only so far as concerns study, but not graduation. The Board seem to have taken a judicious course, and without dwelling on legal quirks, looked to the equitable construction of the Act, according to which, the distinction between medical and other students is recognized; accordingly, while the regulations permit them to *study* in medicine, without having a tutor, answering at examinations, or attending College duties, the Board require them, in order to obtain a medical degree, to undergo, at least, half the probation in arts of other students. Two years must be spent in laying in those fundamental principles of logical reasoning, and mathematical calculation, by the aid of which, if obtained and rendered available, neither the subsequent parts of the College course, nor the scientific part of medical education, presents any difficulties, that are not readily surmounted.

We repeat it, that it is better that the student should study two years, than smatter four. We are well aware, that some students have not only obtained College honours during the entire four years, but also, and at the same time, diligently pursued their medical education; but such examples are rare, and would not form a substratum for legislation on the subject.

Taking every thing into account, the deference required by the charter of the University of Dublin to those of Oxford and Cambridge, the obligations imposed on the Board by the School of Physic Act of Parliament, the necessity (as they would avoid the institution of another Irish University) of rendering Trinity College available for extensive medical as well as other graduation, and the state of the law, both of the land and of public opinion, whereby "doctors" are put by far too much on a level; and further, the indispensability of *some* scientific and classical education to a physician; we really do not see how the heads of the University could, as matters stand, have adopted a more judicious course. We do not wish to be understood as vindicating either the Act of Parliament, the public, or the candidates who prefer inferior to superior degrees; but we repeat it, that in the present state of affairs, the Board have done their duty. How they may or ought to act, on these things being *changed*, is another question.

THE

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OF

MEDICAL SCIENCE,

1 NOVEMBER, 1840.

PART I.

ORIGINAL COMMUNICATIONS.

ART. VI.—*Cases of "Night,*" or "Moon Blindness," and of ordinary Amaurosis, caused by Onanism and inordinate Venery; with Remarks.* By ROBERT CANE, M.R.C.S., Kilkenny.

I HAVE been induced to select the following cases, out of several similar ones, occurring in my practice, and to publish them, first, because of the rare occurrence of night blindness in England and Scotland, a fact proved by the admission of some of the best† writers on eye diseases in both of those countries;

* I have taken the liberty of using the English term for this disease, in consequence of the indiscriminate use of the terms nyctalopia and hemeralopia, each of which names has been used to imply either night or day blindness, according to the arbitrary construction of those terms by individual writers, so that there is no fixed meaning for either of the technical terms.

† Upon the rarity of night blindness in Great Britain, Dr. Grant says, "nyctalopia is little known in this country;" article Nyctalopia, page, 183. vol. iii. Cycl. Pract. Med. Dr. Mackenzie, in his splendid work on Eye Diseases, quotes a case of Dr. Pye's, and says, it is "a disease * * rare in this county," page 817, third edition. Wardrop states that he had "never observed nyctalopia in Britain," page

and secondly, because onanism and venery have not been recognized by systematic writers, as a most prevalent cause of amaurotic diseases, or dwelt upon as their importance deserves. Indeed, some writers, in enumerating the causes of amaurosis, have omitted them altogether,* while others, placing them low in the list of causes, have despatched them in a sentence; and no one writer I can call to mind has mentioned them at all as a source of night blindness. Now I believe it to be of consequence that the attention of the Profession should be directed to the frequency of such practices constituting a chief cause in the production of amaurosis; and by being continued, even during medical treatment, becoming antagonists to the skill of the physician who must search for the cause ere it will be admitted or can be removed; and if it remains undiscovered, and consequently unremoved, then will his treatment most assuredly terminate in failure. Amongst the vast variety of unmanageble diseases, which present themselves in practice, there are, perhaps, none more frequently embarrassing—none, except phthisis, with which so vast a number pass from the prescriber's study, just as they entered it, *opprobria* to his science. Such is, I believe, the experience of those who have had the most extended field of practice, and one of the objects of the present

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191, vol. ii. of Morbid Anatomy. And Samuel Cooper, in his lectures delivered at the London University, speaking of cases of night blindness, says, "in this climate they are rare, and where they do occur are only relapses of persons who have been previously affected in hot climates," page 483, vol. v. London Med. and Surg. Journal. I do not know whether the disease be really more prevalent in Ireland generally, than it is in Britain, but I know that none of my patients were ever out of Ireland.

* Amongst the authors who incidentally mention venery and onanism, without attributing to them their due importance in constituting leading causes of amaurosis, are Mackenzie in his Monograph, Jacob in the Cycl. of Pract. Medicine, Tyrrell in Costelloe's Cyclopædia, and Copland, Med. Dict. While I find that Wardrop, in his admirable Morbid Anatomy of the Eye, Ware on the Amaurosis, and Mackintosh in his Practice of Medicine, omit it altogether; and none of those writers trace night blindness to such a cause.

paper is to direct attention to a class of amaurotic diseases, resulting from a specific cause, which cause being removed, the treatment becomes at once simple and eventually successful, if assistance be had before disorganization has taken place. And it is the more important that attention should be directed to this source, if I be correct in estimating onanism and venery as the most productive causes of the diseases in question, still more so if I be correct in declaring my belief, that if through want of suspicion, or false delicacy on the part of the prescriber, the practice is undiscovered; or if suspected and discovered, he yet omits to denounce the crime, and to prophesy the sure and fearful results, so as to deter from its repetition; the result of such omission will be the continuance of the infatuating practice, and the marked failure of all remedies prescribed. Of course, it requires great delicacy and peculiar tact and management to arrive at the essential knowledge; but the intelligent physician will know how to proceed in his investigation without rudely shocking the innocent by a false charge, or offending even the guilty by a sudden or gross accusation. He will feel his way cautiously and steadily, he will gradually open the character of his patient, he will draw out the tendencies of his mind and of his pursuits; he will win his confidence—while, perhaps by an allusion to some similar case, where venery produced similar symptoms, he will prepare his patient for a full disclosure, by letting him feel there is nothing new or singular in his case, and that his attendant's previous knowledge of such matters precludes the risk of his being shocked by a free confession, for he is already fully in possession, and the safe depository of, many such secrets. I have had several of those cases under my care, and as yet, the treatment of all those where the amaurosis was uncomplicated with mischief elsewhere, or not of an organic nature, has been satisfactory and successful; while I am free to confess, that I have found, with but few exceptions, the amaurotic affections resulting from other causes most unmanageable.

The following cases are arranged according to the dates of attendance.

Case I.—June 2nd, 1838. Mr. ——,aged 40, consulted me for complete loss of vision in the right eye, and increasing weakness of sight in the left eye. Both eyes small and grey; pupil of right eye broadly dilated and irregular on the upper edge, the iris being somewhat puckered. Nothing remarkable in the appearance of the left eye, except the conjunctiva, which looks muddy and watery in both eyes; the iris in both eyes moves but tardily under the stimulus of light. Can read very large print with the left eye, but only for a moment or two, when the letters spread. Is hardly sure that he distinguishes between light and shade with the right eye. Feels tottering in the street, which he attributes to his want of vision; countenance anxious; surface natural; pulse 110, tongue clean; but moist and flabby; contents of chest and abdomen healthy; feels depressed and weakly. States that the blindness has been creeping on him for the last month, but is particularly bad within the last week. In reply to inquiries, reads sometimes at night, does not drink, keeps good hours, and is not addicted to venery of any kind! Ordered,

℞ Pil. Hydrarg.
Pil. Coloc. c. āā. gr. v.
M. ft. pil. ii. h. s. s. et sumat cras mane Misturæ Sennæ Comp. ℥iss.

June 4th. Symptoms unimproved; complains of some stomach uneasiness, and a sense of giddiness in the head; medicine acted but slightly. Ordered,

Pil. Hydrarg. gr. v. hac nocte, et mane sumat sequent. haust.
℞ Carb. Magnesiæ ℥i.
Vini Rhei ℥ss.
Aquæ Cinnam. ℥ss.
Mannæ ℥i. M.
Cucurbitulæ, cruent. applicentur nuchæ, et mittatur sanguis ad ℥viii.

June 5th. Was cupped on yesterday, and got weak after the abstraction of two ounces of blood; medicine acted on his bowels; feels weaker and his sight is much worse; pulse feeble and 120; expresses his regret that he did not deal candidly with me on the first day, as he now fears he set me astray as to the true nature of his complaint. He now admits the long continued indulgence of the most morbid sexual propensities, such as the constant usage of artificial means of arousing exhausted passions, the particulars of which are revolting, and unnecessary to repeat here; suffice it that his acknowledgment altered my views of the nature of his case, and of the treatment. I apprised him that it was essential to his cure that those practices should be omitted, that otherwise he must calculate on certain blindness and a premature death. I directed him to drink a bottle of porter and to eat fresh meat at luncheon and dinner, and to use an ounce of the following mixture, thrice daily.

℞ Sulph. Quinæ ʒss.
Acidi Sulph. dil. ʒii.
Infusi, Rosar. ℥ix. M.

He was continued under this treatment, the quinine being increased to five grain doses, and three glasses of port wine being added to his diet list, until the 12th of the ensuing July, being about five weeks, when the sight of both eyes was perfectly restored, and he has not since had any return of the disease.

Case II.—October 5th, 1839. J. D., aged 34, under the middle size, slight, but muscularly made, countenance flushed and drowsy looking; complains of sense of fulness in the head and dimness of sight, to such an extent that he occasionally walks with his hands stretched before him to avoid being knocked, and some weeks ago he walked into the River Suir off the quay of Waterford. The pupils are broadly dilated, the left most so; iris sluggish under light; conjunctiva and sclerotica are deeply injected; is slightly dyspeptic; bowels confined;

pulse 90, and nothing unusual in its character; was in Stevens's Hospital in the early part of the summer, where he was put under mercury; had blistering ointment to his head, and a seton in his neck; thinks his sight was improved by the salivation, but it was as bad as ever in a few days after; but the mercury cured severe neuralgic pains in his arms and legs, which he then laboured under. The seton in his neck fell out, and he is now worse than when in Dublin.

This man's complaint is clearly traceable to his having married about three years since, and as he states it, "having used sinful means to force, and enable him to gratify desires oftener than nature wanted." The practices were omitted, and the following treatment adopted:

Cucurbitulæ C. nuchæ appl. et mittatur sanguis ad ℥xv.
℞ Pil. Coloc. c. gr. x. Ft. pil. ii. h. s. s.

The next day he felt much better; he continued under treatment until the latter end of November, in which time he was again cupped twice, had the seton replaced, and got aperients occasionally. He is now in the perfect possession of his sight.

Those two cases of amaurosis resulting from the same cause, illustrate very opposite states of the system, but both manageable under ordinary treatment as soon as the source was removed. The next four are cases of night blindness,* resulting from onanism.

Case III.—April 26, 1840. W. B., aged 19, complains that he is "totally blind every night from dusk till morning;" looks to be in perfect health; says he now sees as well as any man, but expects to get blind to night as usual; pupils rather dilated,

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* The following graphic sketch of nyctalopia by the eloquent Heberden is worth quoting: "Circa solis occasum res omnes cœperunt colore infici cœruleo, qui sensim increvit in speciem nubis, et brevè postea oculi adeo caligabant, ut candelæ lucem cernere vix posset. Crastino mane acies oculorum restituta est, cum vero advesperasceret, lumen simile modo omissum est." De Nyctalopia, page 282, Commentarii, Londinii, M.DCCC.II.

and iris rather slow in moving on exposure to light; conjunctiva slightly injected; pulse 86 and strong; tongue white and flabby; bowels regular; is a strong made young man, brown eyes and hair, and ruddy complexion. His sight has been failing him at night for the last six weeks, and is much worse within the last fortnight; three weeks ago he could see a halo round a candle, but now all is darkness; he gropes his way to bed, a candle being quite useless. In reply to inquiries, states that he never had sexual intercourse, but that he has been about three years practising onanism; latterly he has done so generally three times daily; has frequent nocturnal emissions. Ordered to be bled to a pint; to have blisters behind the ears; and occasional aperients. On the eighth of May he got 3 grs. of blue pill night and morning, which touched his mouth by the 14th, and on the 16th he was well, and continues so still; resolved never again to commit the crime which was blinding him.

Case IV.—May 4th, 1840. J. Q——, aged 26, complains that he gets quite blind every evening as it grows dusk, and remains so until morning breaks; that he has been in ill health these twelve months past, but was not blind at night until about two months since; pupils natural size; iris slow under light; eyes and skin have a dull icteric tinge; pulse 120, and feeble; feels weak, and has lost his appetite; tongue covered with a light brown coat, moist and flabby; had pain in the right side about three months back; right hypochondrium still swollen, and tender under pressure; abdomen tumid, but does not appear to contain fluid; the alvine discharges are scanty, but contain some bile; urine high-coloured and small in quantity. Has practised onanism for the last seven years, and to a frightful extent; has nocturnal emissions every night. Was directed to rub tart. ant. ointment over the right side, and to take night and morning the one-sixth of a grain of sulph. ferri, and 4 grs. of Rufus's pill, and to have porter and free animal diet. Under this treatment his general symptoms have improved; the enlargement in the right side is much lessened; the discoloration

of the skin is disappearing, and he feels stronger, but the night blindness still continues; as the hepatic symptoms have improved, I have commenced quinine with him, and he has discontinued his mal-practices.

Case V.—May 20th, 1840. J—— K———, aged 18, complains he is blind at night; can barely see stars round a candle; feels weakly, but has no pain or sickness of any kind; is thin and emaciated; pupils a little dilated, and iris slothful; countenance pale; tongue moist, and, as in all those cases, morbidly soft and flabby; pulse 100, and feeble; bowels and kidneys acting healthily; admits he has been practising onanism since he was fifteen years old; has often practised it four times daily—latterly not so often; nocturnal emissions; has felt the blindness creeping on him for the last year; sees perfectly well during the day. The treatment has been an aperient, quinine pills, and nourishing diet. He is rapidly improving; he can now see objects at night, but cannot yet see to read or work.

Case VI.—June 1st, 1840. P—— M———, aged 20, was jaundiced about a year ago, and still continues so, but thinks worse of his getting completely blind, which he does every night when "he sleeps it off till morning;" pupils dilated; iris sluggish; conjunctiva ochre yellow; tongue brown and flabby; pulse 120, and miserably weak; tenderness over region of liver, and dulness of sound up to sixth rib at right side; abdomen swollen, and with distinct fluctuation; alvine discharges without bile; urine scanty and high-coloured; has been for several years practising onanism, and knows it was it that "sickened" him. I am at present treating him for the ascites and hepatic disease, but confess I have no hope of his recovery; but will detail his case upon some future occasion, in connexion with such other analogous cases as I may happen to see.

I have now detailed six cases of affections of the retina, all resulting from improper use of the genitals—from practices, long recognized by the Profession as causes of diseased action; but, judging from the evidences furnished in my practice, I

would say, that those practices are generators of disease to an extent not as yet professionally recognized or known, and most essential to be known. For as well might a surgeon set about curing the hectic fever resulting from an incurably diseased joint, without removing the limb, as to cure amaurosis resulting from onanism or venery while the practice is undiscovered and unarrested. And I do think that in searching for those causes, one is not always depending upon mere conjecture, but that there are, occasionally at least, collateral aids which may be brought to assist the inquiry; and it has more than once struck me, that there are some certain characters in the human countenance, the results of habitual indulgence in peculiar thoughts and desires, and constituted in a great degree by the action of the features, while indulging those thoughts; and that those characters after a time become fixed, a physiognomy in itself, and differing from Lavater's system in being less fanciful and more real—in arising, not from the natural form of the features, but from the workings of mind and passion upon them, and which leave a sort of permanent impress behind. Thus there is in the mere animal man—the mere sensualist, a peculiar expression about the eye, partly caused by a corrugating of the lids at the outer canthus; a peculiar expression of the eye itself, a slow and stealthy mode of moving it over, and up and down an object, a language in the glance itself; while the lips are compressed and protruded, a "tout ensemble" not easy to analyze, but which the observer of human character soon becomes familiar with, and which, if his station or his profession be one permitting him to master men's secrets, will lead him to recognize a distinct order of the human family, many of whose diseases may be thus traced within a narrow compass, and to a positive source. I feel that the subject is altogether one of great delicacy, and requiring that it should be approached with caution and discretion. One, which I would hesitate to write upon, were it not that in matters where, morally and medically speaking, human happiness is so deeply at stake, it behoves

every man as far as in him lies to arrest crime and disease, and in effecting it, to speak just as freely as he thinks. Besides it is a point of much consequence to the junior practitioner to have attention directed to those so frequent and but too well concealed sources of disease, of which, perhaps, he never heard his lecturer speak, and regarding which his manual of medicine is nearly if not altogether silent. And while on this subject I will mention an observation which I have extended over a term of fourteen years. The first case of diabetes mellitus I ever witnessed occurred about the year 1826; that patient acknowledged to me that he dreaded onanism had caused his disease. Since then I have seen ten cases of diabetes; of that number six acknowledged onanism to its most destructive extent, one admitted it to the extent of using partially as a means to arouse passion for sexual intercourse, and the remaining three denied every thing of the kind, whether with truth I know not. But the admission of the other eight made a deep impression on my mind, and I cannot now meet an amaurotic, or a diabetic patient, in whose case, if, after due investigation, some other cause is not discoverable, without my mind reverting to this, in my practice at least, most frequent source of disease. Perhaps I am upon a hobby, as too many of the Profession are, but if I am, I have some reason to feel attached to it, as it has repeatedly carried me to a correct diagnosis, and a happy prognosis. And if in this article I have ventured to generalize too far, I shall yet make the "amende honorable," if the experience of others, and the results of my own future practice, shall enable me to discover that I have erred in saying—onanism first, and morbid venereal indulgence next, are the most prolific sources of amaurotic affections and of diabetes. On the pathology of amaurotic affections resulting from the causes I have mentioned I could offer but an hypothesis, but there are some points connected with the subject, where the anatomy of parts concerned, and well known physiological facts, supply a quantity of analogical reasoning, that in defect of better argument may be worth

examining. As to the question, whether the brain is directly concerned in action of the genitals further than the mere supplying of the act of volition, or is indirectly concerned by means of the sympathetic communications of the ganglionic system, arguments may be used at both sides; but it is worth recording. that Muller* appears to question that the cerebellum is the seat of sexual passion, and considers that Gall has not proved it to be so. If it is not, perhaps it may be yet ascertained that parts more central or anterior constitute the organ of amativeness; and that it may be some part in connexion with the origin or course of the optic nerves; and if amaurosis be so frequent a result of the morbid exercise of sensual propensities, pathological inquiry into the precise seat of mischief may yet throw light upon important functions, and disputed points of physiology, as well as upon the true nature of an important disease,—an inquiry which may be prosecuted in large hospitals, but for which private practice in the provinces affords little or no opportunities, and an inquiry the result of which must be of importance, whether its results be negative or affirmative as to the sexual functions of the cerebellum, whether it proves the amaurosis I have been describing to originate in mere local congestion and pressure, or from hyperemia and sympathetic communication,† or from actual and direct communication

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* "Gall regards the cerebellum as the organ of sexual impulse; the grounds on which this view is grounded are not conclusive." Page 833, vol. i. Muller's Physiology, by Baily.

† In connexion with the subject of sympathetic communication, Copland mentions, "if the great sympathetic be divided in the upper part of the neck, the pupil becomes contracted and immoveable, and the eye wastes." Art. Amaurosis, part I. Med. Dict. It is certainly remarkable what a number of filaments from the sympathetic nerve accompany the vessels constituting the circle of Willis.

In concluding this paper it strikes me as not unimportant that Heberden's solitary case of night blindness, and the majority of cases described by other authors, have nearly all occurred amongst sailors or soldiers, a class of persons much addicted to onanism, especially sailors, who appear to be frequent subjects of the disease.

between the organ of amativeness and the origin or course of the optic nerves. There is strong presumptive evidence, that to the excitement of the sexual propensity, a certain impulse of blood to the brain is necessary. Thus, previous to the excitement of the local organs, there is an increase of power given to the heart's action, the circulation is accelerated, and the blood is driven forcibly through its channels, and a sense of heat and of fulness to the head is experienced as an early symptom of the approaching excitement. We may, therefore, venture to infer, that the stimulus of the circulation, increased in force and quantity, is driven towards the brain as a kind of pabulum essential to the perfect arousing of the nervous energy required. And in accordance with this view, is the fact, that the act of hanging, which increases the quantity of blood within the encephalon, is productive of erection and seminal emission, a circumstance, the knowledge of which, I believe there is little doubt, has suggested to exhausted old debauchees the abominable practice of compelling the required stimulus by a sort of partial strangulation; and perfectly in accordance with this view of the necessity of active circulation is Richerand's* animated sketch of the sanguine temperament. The use too of ardent spirits and of other stimulants, which are known excitants of sexual propensities, and which are usually productive of hurrying the circulation, and producing tendency to cerebral congestion, may be adduced as a further illustration. If we take this view, we can readily understand how the unnatural exercise or forcing of passion may induce a somewhat permanent state of congestion about the origin and course of the optic nerves, either by arterial dilatation, or venous engorgement, the result of loss of energy in the returning vessels, and thus produce amaurosis after the manner described by Ware, † as resulting from an

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* See Richerand's Physiology, page 502.

† "A dilatation of the anterior portion of the circulus arteriosus, which I think highly probable has been the cause of the gutta serena in not a few of the instances where no particular account has been given." Page 428, vol. ii. Ware's Observations relative to the Eye.

overloaded state of the vessels, constituting the circle of Willis, and the influence of such a temporary congestion in producing temporal blindness is described in a case quoted in the Medico-chirurgical Review,* where onanism was regularly followed by defect of vision, which was thus produced almost at the will of the patient. Van Swietan,† too, alludes to the orgasm of passion affecting the sight as a natural phenomenon, while he mentions apoplexy as one of the consequences of its improper indulgence. It is in accordance with this view of increased circulation and probable congestion, that I have used depletion in those cases where plethora and other circumstances warranted such treatment; while in cases of an opposite character, where general debility and marasmus existed, with symptoms indicating local congestion and determination, which in such cases appear to be the result rather of loss of balance in the enfeebled circulating mass, than of over quantity or sthenic character, in those cases tonics and generous diet have been used with marked success, premising as the grand essential to the success of any treatment, the discontinuance of the lamentable vice which originated the disease.

Art. VII.—*Researches in Operative Midwifery.* No. IV. *The Forceps.* By F. Churchill, M.D., Physician to the Western Lying-in Hospital, &c., &c.

"Arte non vi."

[Read at a Meeting of the Obstetrical Society.]

It will be at once admitted, I believe, that the greatest triumph of surgery is to diminish the frequency of operations,

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* "She confessed that she was in the habit of polluting herself, and that she was immediately seized with complete blindness whenever she addicted herself to the practice." Case occurring at Hotel Dieu, and quoted from Journal Hebdom. in Med. Chir. Rev. July, 1833.

† Vide his Commentaries, page 326, vol. x.

and to substitute those of minor severity and danger for others involving more serious risk. If this be true, then it must be granted that the invention of the forceps, and their employment in practice, was the greatest improvement recorded in the annals of operative midwifery. Before the introduction of this instrument, the only extracting force at command was obtained by the insertion of a hook into the head of the child, such as is now used in the operation of craniotomy.[a]

This proceeding must of course have been fatal to the child in an immense majority of cases, and the very few who were born alive must have been subsequently endangered by the mutilating process employed in the delivery. But this was not all; every man possessing common feelings of humanity must have shrunk from the painful necessity of such a proceeding, and have deferred the operation as long as possible, by which the danger to the mother was twofold increased.

Now from this double risk, and fearful mortality, we have been relieved by the invention of the forceps, for although we are still obliged to destroy the child occasionally, to secure the safety of the mother, yet this class of cases is incomparably smaller than that, in which, by the timely application of the forceps, both the child and mother escape injury.

For these reasons I conceive that I am justified in stating, that the invention and employment of this instrument is the greatest improvement that has ever occurred in midwifery, even though I may not go the length of certain of its advocates in asserting that it is entirely without danger to the mother or her infant.

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[a] The hook was at first applied to the extraction of dead children only; Guillemeau was the first, I believe, who suggested that it might be used with a living child, if the case were such as that both mother and child would perish, unless the child were sacrificed; and indeed it was after all only a question of time, for the person who scrupled to use it with a living child, had no scruple about waiting till it died and then using it.

It cannot be said that the ancients were altogether ignorant of this method of extracting the infant, although it does not appear to have been generally known. Mulder, in his valuable work, gives the following extract from a translation of the works of Avicenna: "oportet ut inveniat obstetrix possibilitatem hujusmodi fœtus, quare subtilitur in extractione ejus paulatim ; tunc si valet illud in eo, bene est ; et si non liget eum cum margine panni et trahat cum subtiletur valde cum quibusdam attractionibus. Quod si illud non confert, administrentur forcipes, et attrahatur cum eis ; si vero non confert illud extrahatur cum incisione, secundum quod facile fit, et regatur regimine fœtus mortui."[a]

Notwithstanding this very distinct allusion to the power of the forceps, it would appear to have been overlooked or neglected by succeeding practitioners, for we find no allusion to it until the sixteenth century, and then the instrument is brought before us as an original invention. It was invented much about the same time in Germany and England, and we have no reason to believe that either of the inventors was acquainted with the labour of the other.

Mulder states that Jacob Rueff employed the forceps in the year 1554.

Before the time of the Chamberlens it was unknown in England, and even at the time Dr. Hugh Chamberlen published his translation of Mauriceau in 1672, it was still a secret. No allusion to such an instrument is to be found in Raynalde's work (1634,) nor in the translations of Portal (1705,) Deventer (1716,) or La Motte (1745.)

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[a] Mulder Historia Forcipum et Vectium, p. 6. "With regard to the fillets and forceps, they have been alleged to be late inventions ; yet we find *Avicenna* recommending the use of both. The forceps recommended by *Avicenna* is plainly intended to save the *fœtus*, for he says if it cannot be extracted by this instrument the head must be opened, and the same method used, which he describes in his chapter on the delivery of dead children."—*Smellie's Treatise on Midwifery,* Introd. vol. i. p. 40.

In his preface to the translation of Mauriceau, to which I have referred, Dr. Hugh Chamberlen, after mentioning the method of extracting the child by hooks, observed: "But I can neither approve of that practice, nor of those delays, beyond twenty-four hours, because my father, brother, and myself, (though none else in Europe, as I know,) have, by God's blessing, and our industry, attained to, and long practised a way to deliver women in this case without any prejudice to them or their infants; though all others (being obliged, for want of such an expedient, to use the common way) do and must endanger, if not destroy one or both, with hooks. By this manual operation a labour may be despatched (in the least difficulty) with fewer pains and sooner, to the great advantage and without danger, both of woman and child; if therefore, the use of hooks by physicians and chirurgeons be condemned, (without thereto necessitated through some monstrous birth,) we can much less approve of a midwife using them, as some here in England boast they do, which rash presumption in France, would call them in question for their lives."

This extract, however, does not fix the date of the invention by Dr. Chamberlen, nor have we any very accurate data for doing so. Through the kindness of my friend Dr. Aquilla Smith, I possess a portrait of Dr. Paul Chamberlen (the father;) the date is 1658, and it represents a man beyond the middle age, and it may reasonably be supposed that the publication of this print arose from the notoriety he had acquired by his secret for delivering women without injury. This would fix the date of the discovery before 1658. Of his sons, Drs. Peter and Hugh Chamberlen are the only ones whose names are familiar to us.

From some inaccuracy of expression in the extract I have quoted from Dr. Hugh Chamberlen's preface, it was even doubted whether the instrument alluded to was the forceps, but that doubt has been set at rest by Mr. Cansardine, who has published an account of the discovery of Chamberlen's own instruments.

"The estate of Woodham Mortimer Hall, near Maldon in Essex, was purchased by Dr. Peter Chamberlen sometime previous to 1683, and continued in his family till about 1715, when it was sold by Hope Chamberlen to William Alexander, wine merchant, &c."

In an old chest certain obstetric instruments were since found, along with "old coins, trinkets, gloves, fans, spectacles, &c." and were presented to Mr. Cansardine, who thus describes them. "First, we have a simple vectis with an open fenestrum; then we have the idea of uniting two of these instruments by a joint, which makes each blade seem as a fulcrum to the other, instead of making a fulcrum of the soft parts of the mother; and which also unites a power of drawing the head forward. This idea is at first by a pivot, which being riveted makes the instrument totally incapable of application! Then he goes to work again, and having made a notch in each vectis for the joint, he fixes a pivot in *one only*, which projecting, is to be received into a corresponding hole in the other blade, after they have been applied *separately*. It may be observed, that although there is a worm to the projecting part of the pivot, yet there is no corresponding female screw in the hole which is to receive it. Every practical accoucheur will know, that it is not easy, or always possible, to lock the joint of the forceps with such accuracy as to the bring this pivot and hole into opposite contact. This Chamberlen soon discovered, and *next* produced a more light and manageable instrument, which instead of uniting by a pivot, he passes a *tape* through the two holes, and wounds it round the joint, which method combines sufficient accuracy of contact, security, and mobility."[a]

There can now be no doubt of the credit of the invention being due to Dr. Paul Chamberlen, and I think I have shown that there is presumptive proof, that it took place before the year 1654. The secret was, however, carefully preserved, nor

[a] Mr. Cansardine's paper in Med. Chir. Trans. vol. ix. p. 183.

had it been communicated in the year 1716, for in Dr. Hugh Chamberlen's 3rd Ed. of Mauriceau, published in that year, the passage I have quoted is continued in the preface.

About this time, or soon after, the secret appears to have been communicated to one or two, for Dr. R. W. Johnson,[a] when speaking of the forceps, says: "besides these, I have a pair of forceps, which did belong to the late Mr. Drinkwater, (late Surgeon and Man-midwife at Brentford,) who began practice in 1668, and died in 1728. The size and form of this pair agree with those of Chapman and Giffard, save only that the hooks of the handle are turned outwards."

And Mr. Chapman in 1733[b] published a description and a plate of the instrument, which he had used from the year 1726, (*Mulder*) stating it to be the instrument used by the Chamberlens; but without stating whence he obtained it. I have not succeeded in discovering from whom he received it, though from his not claiming the merit of the invention, it is evident that it was communicated to him. He has, however, the great credit of being the first in these countries who published an account of it for the benefit of the Profession.

Mr. Giffard, 1734, used an instrument which he calls an extractor, either as a vectis (with one blade,) or forceps (with both blades.) Speaking of a case where the head was lodged upon the pubis, he says, he "passed it (the extractor) upon one side, and on the other I passed the other cheek of my extractor. When I had fixed them, and brought them as close together as I well could, I drew strongly forwards, by which I found the head advance and its crown appear without the labia pudendi, and in a short time I brought out the whole head, which was very large, &c."[c]

Sir Fielding Ould, 1742, of this city, describes the long

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[a] A new and improved System of Midwifery, p. 170.

[b] A Treatise on the Improvement of Midwifery, &c.

[c] Cases in Midwifery, p. 79.

forceps with the centre screw like Chamberlen's, and recommends its being used laterally. "By the above method," he adds, "the child is often brought forth alive, nay it is my opinion, that with a strict observance of every particular of the above precautions, how trifling soever some of them may appear, that the infant will never be destroyed by this instrument."[a]

Dr. Mowbray, 1723, evidently knew the instrument, but misunderstood both its use and objects.

Burton, 1751, recommended the forceps, and described an improved one, but it does not much differ from those previously in use. He objects to covering the blades with leather, and clearly points out certain cases to which it is not applicable.[b]

Dr. Brudenell Exton, 1751, thinks less of the forceps than his master, Chapman, and limits their use to cases where the head is very low in the vagina. He substitutes assistance with the hand in most cases.[c]

In 1752 Dr. Smellie's work appeared; his natural talent and great power of observation, aided by great experience, placed him on a higher eminence than any of his predecessors, and his work will long continue on many points a standard authority. He shortened the forceps, and, except in a few cases, rejected the second curvature. He also attended more minutely to the mechanism of extraction. He states: "For my own part, finding in practice, that by the directions of Chapman, Giffard, and Gregoire at Paris, I frequently could not move the head along without contusing it, and tearing the parts of the woman; for they direct us to introduce the blades of the forceps where they will easiest pass, and taking hold of the head in any part of it, to extract with more or less force according to the resistance; I began to consider the whole in a mechanical view, and to reduce the extraction of the child to the rules of moving

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[a] A Treatise on Midwifery, &c. p. 156, Dublin.

[b] New and Complete System of Midwifery, p. 213.

[c] New and General System of Midwifery.

bodies in different directions: in consequence of this plan, I more accurately surveyed the dimensions and form of the pelvis, together with the figure of the child's head, and the manner in which it passed along in natural labour; and from the knowledge of these things, I not only delivered with greater ease and safety than before, but also had the satisfaction to find in teaching, that I could convey a more distinct idea of the art in this mechanical light than in any other; and particularly give more sure and solid directions for applying the forceps, and to the conviction of many old practitioners, when they reflected on the uncertainty attending the old method of application."[a]

Mr. Pugh, 1754, appears to have been one of the first who added the curve to the end of the blades to correspond to the axis of the pelvis, and enable the operator to act upon the head when high up in the pelvis. He preferred the long forceps, and applied them over the parietal bones.[b]

Dr. Memis of Aberdeen, 1765, treats of the application of the forceps when the head is arrested in the pelvis, and the pains ineffectual for the delivery;[c] and Dr. Kelly invented a new species.

Mr. Cooper, 1766, treats concisely and carefully of the mode of applying the forceps, and specifies the case in which the intrument may be used.[d]

In 1769, Dr. R. W. Johnston published his treatise on midwifery[e] in which he proposes an improvement upon the forceps then in use; the principle advantages of which consist in the blades being thinner and rather broader. They have also the second curvature, as recommended by Pugh.

Dr. Hamilton, Sen., of Edinburgh, published his work in

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[a] Treatise on the Theory and Practice of Midwifery, vol. i. p. 157, 6th Ed.

[b] Treatise on Midwifery, p. 82. [c] Midwifery Pocket Companion, p. 93.

[d] A Compendium of Midwifery, p. 122, et seq.

[e] A new System of Midwifery, &c., 1769.

1775, and described the various circumstances calling for the use of the forceps. Successive editions contained fuller information on the subject.[a]

Dr. Moor, 1777, gives very short though clear directions for applying the forceps, though he does not specify the cases in which they may be most advantageously used.[b]

In the year 1781 Dr. Sims edited Dr. Foster's (of Dublin) Lectures, in which the short forceps is described. His view of the utility of the forceps seems rather limited, and he applies them obliquely, and only when the head is in the pelvic cavity.[c]

Mr. Perfect published his cases in 1782-3.[d] He used the forceps when the forehead was towards the pubis; in face presentations; when the chin was towards one side of the pelvis; in narrow lower outlet; distorted pelvis; when the head was detained in the vagina; in neck presentations, &c. &c. He employed both the long and short forceps.

Dr. Osborne, 1783, published a very valuable essay on Laborious Labours, containing a defence of the forceps against the accusations of those who preferred the vectis. He appears, however, to over estimate the powers of the instrument, when he states, "I am not afraid of asserting, that, if applied with ordinary skill and attention, it is infallible in its effects, in every possible degree of difficulty, from the slightest to the greatest, if the child's head is only in such a position as to be within reach of the instrument."[e]

Dr. Spence, in 1784, described the successive improvements in the forceps, and laid down rules for their application. He prefers the forceps with the second curve.[f]

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[a] Elements of the Practice of Midwifery. [b] Elements of Midwifery, p. 93.

[c] Principles and Practice of Midwifery, &c., p. 150.

[d] Cases in Midwifery, 2 vols.

[e] Essays on the Practice of Midwifery, p. 88, 2nd Ed.

[f] A System of Midwifery, vol. i. p. 185.

In 1782 Dr. Leake published a description of a pair of forceps with three blades, invented by him. He intended it for those cases in which the occiput of the child catches on the symphysis pubis, in consequence of the head presenting with its long diameter corresponding to the antero-posterior diameter of the upper outlet. In this case the ordinary forceps, applied laterally, would rather increase the evil, which may be remedied, he thinks, by passing up a third blade in front to act as a lever.[a] I do not know that it has been used since his time.

Mr. Dease, 1783, prefers the form of Levret's forceps, and objects to their ever being applied when the head is at the brim or just entering the pelvis. With these exceptions he concludes: "that the forceps, prudently applied, is an instrument which, in good hands, may safely effect delivery in different labours, is what every practitioner must have been repeatedly convinced of, as also that it has many disadvantages."[b]

Dr. Aitken, 1784, applied his peculiar mechanical taste to the improvement of the forceps, but it will probably be admitted without success. He says, "I have added a screw to the handles, by which the closing is prevented, so that the head is protected. I have improved the manner of locking or connecting the blades, so as to prevent the possibility of catching and wounding the mother's parts, or bruising the child. I have likewise constructed this instrument on the principle of the *living lever,* and of course named it *living forceps,* an improvement in many situations highly important."[c]

The publication of Denman's Aphorisms, 1786, and his Essays on Difficult Labours, 1787, gave a more definitive form to the information already possessed upon instrumental deliveries, and added new rules. Since the time of Denman, every writer has described the forceps, and laid down rules for their use. The reader may consult, with advantage,

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[a] Introductory Lecture, p. 108. [b] Observations in Midwifery, p. 40.

[c] Principles of Midwifery, p. 74.

the works of Dr. John Clarke,[a] Dr. Burns,[b] Dr. Merriman,[c] Dr. Dewees,[d] Dr. Conquest,[e] Dr. Gooch,[f] Dr. Campbell,[g] Dr. Davis,[h] Dr. Ryan[i], Dr. Ramsbotham,[j] Dr. Blundell,[k] Dr. Ashwell,[l] Dr. F. Ramsbotham,[m] Dr. Maunsell,[n] Dr. Collins,[o] Dr. Hamilton,[p] Dr. Meigs,[q] &c. &c.

There is some doubt as to the accoucheur who first employed the forceps in France; when Palfyn promulgated his discovery, (1720,) after the visit of Chamberlen to Holland, Gillies Le Doux of Ypres claimed the invention as his own, but whether Palfyn was indebted to him for the secret, we do not know.

One of the first persons who employed the forceps was M. Duse, 1733. A description of his instrument was published by Dr. Butler of Edinburgh.[r]

In the year 1741 Jacques Mesnard published an account of a new instrument which he calls "tenettes à cuiller," in the Journal de Verdun, and repeated the description, with a plate in his "Guide des Accoucheurs," 1743. The handles of these forceps did not cross, but were joined by a screw. He also invented a pair of "tenettes à crochet."[s]

Gregoire, Jun., 1746, employed a pair of forceps which have been described by Boehmer.[t]

In 1747, Levret published his valuable work, "Observa-

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[a] London Practice of Midwifery, p. 209.

[b] Principles of Midwifery, p. 463. [c] Synopsis of Difficult Parturition, p. 163.

[d] Compendious System of Midwifery, &c., p. 296.

[e] Outlines of Midwifery, pp. 96, 111. [f] Lectures by Skinner, p. 201.

[g] Introduction to Midwifery, p. 230. [h] Operative Midwifery.

[i] Manual of Midwifery, p. 543. [j] Pract. Observations in Midwifery, p. 252.

[k] Principles and Practice of Obstetricy, p. 501.

[l] On Parturition, p. 358. [m] Lond. Med. Gazette, 1833-34.

[n] Dublin Practice of Midwifery, p. 129.

[o] Pract. Treatise on Midwifery, p. 10. [p] Pract. Observations, vol. ii. p. 93.

[q] Pract. of Midwifery, p. 286. Philadelphia N. S. 1838.

[r] Le Roy Prat. des Accouch. p. 82. [s] Ed. Med. Essays, vol. iii.

[t] Essay, De Usu et Præstantiâ Forcipis Anglicanæ, &c., &c. 1746.

tions sur les Causes et les Accidens de plusieurs Accouchemens laborieux," in which he described the long forceps (with plates) which is still in use in France, and bears his name. He also invented an instrument very like Leake's forceps, for the purpose of extracting the head when separated from the body, and left in the uterus. Astruc, in his "Art d'Accoucher," (1766,) speaks of the forceps as the perfection of operative midwifery, and Deleurye, (1770,) in his "Traité des Accouchemens," as the invention by which midwifery was civilized.

In 1788 Coutouly presented to the Academie Royale de Chirurgie a new species of forceps, the blades of which did not cross, and which was so arranged as to make a graduated pressure upon the head of the child, (*Mulder.*)[a]

Du Fot, 1775, in his "Principes sur l'Art d'Accouchemens," recommends the forceps in "enclavement" of the head. In the year 1771 Burton's work was translated by M. Le Moine, and Smellie's by M. de Preville, which placed at their command all that was known at that time in this country on the subject of the forceps.

M. Herbiniaux published his "Traitè sur divers Accouchemens laborieux" about 1785, in which he defends the lever against the forceps, and attacks Levret; but Levret's authority prevailed with his countrymen, and the forceps became the favourite instrument. It has been since slightly modified by several persons, and recommended by Saccombe,[b] Maygrier,[c] Baudelocque,[d] Boivin,[e] Lachappelle,[f] Flamant,[g] Capuron,[h] Gardien,[i] Velpeau,[j] Moreau, &c.

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[a] Historia Forcipum, p. 77. [b] Elemens de la Science des Accouch. p. 274.

[c] Nouveaux Elemens de la Scien. et de l'Art des Accouch. 1814, p. 393.

[d] L'Art des Accouchemens, &c., vol. ii. p. 133, 6th Ed.

[e] Memorial 1817, p. 275, 2nd Ed. [f] Pratique des Accouchemens.

[g] Mem. Pratique sur le Forceps Strasburgh, 1816.

[h] Cour d'Accouchemens, p. 452, 4th Ed.

[i] Traite Complet d'Accouchemens, vol. ii. p. 507.

[j] Traité Complet des Accouchemens, p. 415, Ed. Brussels.

We have already seen that Mulder gives the priority of invention among the Germans to Rueff in 1554. His description, however, does not appear to have led to the use of the forceps, for we find nothing said about them for more that one hundred years.

About the year 1673 Cornelius Van Solingen (according to Haller) fabricated a pair of forceps for the purpose of extracting the fœtus, (*Mulder.*[a]) He was followed by Slevogt[b] in 1709, and Palfyn, 1720. Palfyn visited France and England, and it is supposed that he obtained his information about the forceps from this country. It has already been stated that his supposed invention was claimed by Gillies Le Doux of Ypres.

In 1747, Velsen and Rathlauw settled at Amsterdam and professed to have an instrument the (forceps) by which women could be delivered, but they were not allowed to remain, because of a law which prohibited any one from practising midwifery there, who did not know the secret of Roonhuysen.

In 1747, Schlichting published a plate of a pair of forceps[c] which he saw in possession of Uwens, who received them from Broderode, a disciple of Ruysch.

In 1750, J. E. Janck described Bing's forceps.

In 1752, P. De Wind, "ex præcepto Chapmanni," published an account of the forceps he used, which were of different lengths, and so arranged that they required but one hand to use them.

In 1770 J. F. Henckel published his "Abhandlung von der Geburtshülfe," in which he treats at some length of the forceps.

G. A. Freid, 1770, in his lectures, recommended Levret's forceps, and used them in private practice. His pupil Em-

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[a] Historia Forcipum, &c. p. 13.

[b] De Instrumentis Hippocratis Chirurgicis, &c. Jena, 1709.

[c] In Embryulcia nova detecta, &c.

manuel Fries in 1771 described an instrument differing from the forceps of Levret.

J. C. Gehler, in 1790, advocated the forceps used by Johnson in preference to Levret's.

In 1777, Van der Laar used a pair of forceps resembling two vectes, in the curvature of their blades, and a similar pair was described by Sleurs in 1783.

Starke and Mayer in 1785, and Saxtorph in 1791, likewise published descriptions of the alterations or improvements made by each.

In 1794, J. Mulder published his "Historia literaria et critica Forcipum et Vectium," one of the most learned and valuable works that has ever appeared on any branch of midwifery. To this work I am indebted for many of the foregoing details in the history of the forceps, and for the measurements and plates which follow.

Since his time I find the use of the instrument explained and recommended by Spiering[a] (1801,) Saxtorph[b] (1803,) Stein (1809,) Steidelè[c] (1813,) Ritgen[d] (1820,) Froriep,[e] Siebold,[f] Osiander,[g] Carus,[h] Joerg,[i] Cohnstein,[j] Busch,[k] Rosshirt,[l] Kilian,[m] &c.

Having given this brief sketch of the history of the forceps, I shall next quote the different measurements given by Mulder, and then allude to the principal peculiarities of the variations and improvements which have been proposed.

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[a] Die pratische Geburtshülfe, 273.

[b] Gesammelte Schriften, &c. p. 270.

[c] Abhandlung von der Geburtshülfe, vol. iv. p. 9.

[d] Anzeigen der Mechan. Hülfen bei Entbindungen, &c. p. 328.

[e] Handbuch der Geburtshülfe, p. 437.

[f] Lehrbuch der Geburtshülfe, p. 301.

[g] Die Ursachen und Hülfsanzeigen der Geburten, &c. p. 245.

[h] Lehrbuch der Gynæcologie, vol. ii. p. 318.

[i] Handbuch der Geburtshülfe, p. 469.

[j] Handbuch der Geburtshülfe, p. 342.

[k] Lehrbuch der Geburtskunde, p. 602.

[l] Die Anzeigen zu der Geburtshülflichen Operationen.

[m] Die operative Geburtshülfe, p. 544.

Table I.—Dimensions of Forceps in Use from 1554 to 1769.

Forcipum Auctores.	Longitudo. Forcipis.	Longitudo. Cochlearium.	Longitudo. Manubriorum.	Angulus quo divergunt Cochlearia.	Distantia. Apicis Cochlear. et loci quo divergunt.	Distantia. Cochlearium intermedia maxima.	Distantia. Loci Cochlear. maxime distantis et apicis.	Cochlearium ad apicem.	Latitudo maxima Cochlearium.	Dist. latitudinis maximæ Cochl. et apicis.	Longitudo fenestrarum.	Apertura fenestrarum maxima.
Rueff . . .	11 poll.	$5\frac{5}{12}$ poll.	$4\frac{7}{12}$	..	5 poll.	..	..	..	..	..	..	..
Palfyn, 1, . .	14	9	5	80°	6	3 poll.	3 poll.	Nulla.	..	..	..	..
Palfyn, 2, . .	15	$10\frac{1}{2}$	$4\frac{1}{2}$	14°	$5\frac{1}{2}$	$3\frac{1}{3}$	$2\frac{1}{2}$	Do.	$1\frac{1}{3}$	$1\frac{1}{4}$ poll.	..	..
Incerti . . .	15	$8\frac{1}{2}$	$6\frac{1}{2}$	36°	$5\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{3}$	Do.	..	..	..	..
Duse . . .	16	$10\frac{3}{4}$ v. $8\frac{1}{4}$	$5\frac{1}{4}$ $7\frac{3}{4}$	34°	$7\frac{1}{2}$	4	$2\frac{7}{12}$	$1\frac{1}{3}$ poll.	2	..	..	..
Giffard . . .	$12\frac{1}{2}$	$7\frac{1}{4}$	$5\frac{1}{4}$	40°	$6\frac{2}{3}$	$2\frac{1}{3}$	2	2	$1\frac{3}{4}$	$1\frac{5}{6}$	$4\frac{7}{12}$	$1\frac{1}{4}$ poll.
Freke . . .	12	$6\frac{1}{2}$	$5\frac{1}{2}$	34°	$5\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{3}{4}$	2	$1\frac{2}{3}$	$1\frac{7}{12}$	$3\frac{2}{3}$	1
Chapman . .	15	$9\frac{3}{4}$	$5\frac{1}{4}$	22°	9	$2\frac{1}{3}$	$3\frac{5}{6}$	Nulla.	$1\frac{2}{3}$	$1\frac{1}{3}$	5	$1\frac{1}{4}$
Mesnard . .	12	$8\frac{1}{4}$	$3\frac{3}{4}$	40°	5	$2\frac{1}{2}$	$2\frac{1}{2}$	Do.	..	..	..	..
Gregoire . .	15	$8\frac{1}{3}$	$6\frac{2}{3}$	34°	7	$2\frac{3}{4}$	$2\frac{1}{6}$	$1\frac{1}{4}$ poll.	$1\frac{2}{3}$	1	$5\frac{5}{6}$	$\frac{5}{6}$
Rathlauw, 1, .	$13\frac{1}{2}$	$6\frac{1}{2}$	7	46°	$6\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$\frac{1}{4}$	1	..	..	..
Rathlauw, 2, .	$15\frac{1}{2}$	7	$8\frac{1}{2}$	52°	$6\frac{7}{12}$	3	$2\frac{1}{4}$	1	..	..	$2\frac{1}{3}$	..
Schlichting .	$13\frac{1}{2}$	6	$7\frac{1}{2}$	80°	$5\frac{1}{2}$	$4\frac{5}{12}$	$2\frac{1}{4}$	$2\frac{1}{6}$	1	..	..	..
Levret, 1, . .	18	$9\frac{1}{2}$ $10\frac{1}{2}$ $11\frac{1}{2}$	$8\frac{1}{2}$ $7\frac{1}{2}$ $6\frac{1}{2}$	10°	$8\frac{1}{3}$	$2\frac{1}{4}$	$3\frac{2}{3}$	$\frac{1}{4}$	..	..	..	..
Levret, 2, . .	$16\frac{1}{4}$	$9\frac{1}{2}$	$6\frac{3}{4}$	14°	$8\frac{5}{12}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$\frac{1}{4}$	$1\frac{2}{3}$	2	$6\frac{3}{4}$	1
Bing . . .	$18\frac{1}{2}$	$9\frac{3}{4}$	$8\frac{3}{4}$	24°	8	$3\frac{3}{4}$	$2\frac{1}{2}$	$\frac{1}{3}$	2	1	..	..
Levret, 3, . .	$15\frac{1}{2}$	$8\frac{1}{2}$	7	18°	$7\frac{1}{2}$	2	3	..	$1\frac{1}{2}$	$1\frac{1}{3}$	6	$\frac{3}{4}$
Burton . . .	$11\frac{1}{2}$	$3\frac{3}{4}$	$7\frac{3}{4}$	varius,	$3\frac{3}{4}$	2	2	$\frac{1}{6}$	..	..	..	..
De Wind . .	$9\frac{1}{2}$	$7\frac{1}{2}$	2	20°	$7\frac{1}{2}$	$1\frac{3}{4}$	$4\frac{1}{2}$	..	$\frac{3}{4}$	..	..	..
Smellie, 1, . .	11	$6\frac{1}{2}$	$4\frac{1}{2}$	80°	6	2	$3\frac{2}{3}$	..	$1\frac{1}{6}$	$1\frac{1}{4}$	4	$\frac{3}{4}$
Smellie, 2, . .	$12\frac{1}{2}$	$7\frac{3}{4}$	$4\frac{3}{4}$	54°	7	2	$3\frac{1}{4}$	..	$1\frac{1}{3}$	$1\frac{3}{4}$	5	$\frac{3}{4}$
Pugh, 1, . .	11	$7\frac{1}{4}$	$3\frac{3}{4}$	18°	7	$2\frac{1}{2}$	3	$\frac{1}{6}$	1	$1\frac{1}{2}$	4	$\frac{1}{2}$
Pugh, 2, . .	14	$8\frac{3}{4}$	$5\frac{1}{4}$	46°	$7\frac{1}{4}$	$2\frac{1}{2}$	3	$\frac{1}{4}$	$1\frac{1}{3}$	$1\frac{1}{6}$	$5\frac{1}{2}$	$\frac{5}{6}$
Johnson, . .	11	$6\frac{2}{3}$	$4\frac{1}{3}$	66°	6	$2\frac{1}{2}$	$3\frac{1}{2}$	..	$1\frac{1}{6}$	$1\frac{2}{3}$	$3\frac{3}{4}$	$\frac{1}{2}$

Table II.—Dimensions of Forceps in Use from 1771 till 1793.

Forcipum Auctores.	Longitudo. Forcipis.	Cochearium.	Manubriorum.	Angulus quo divergunt Cochlearia.	Distantia. Apicis Coch. et loci quo divergunt.	Cochlearium intermedia maxima.	Loci Cochl. maxime distantis et apicis.	Cochlearium ad apicem.	Latitudo maxima cochlearum.	Dist. latitudinis maxime cochl. et apicis.	Longitudo fenestrarum.	Apertura fenestrarum maxime.
Fried,	15½ poll.	8½ poll.	7 poll.	18°	7½ poll.	2 poll.	3 poll.		1½ poll.	1 ⅓ poll.	6 poll.	¾ poll.
Leake,	13	7 11/12	5 1/12	60°	7 7/12	2½	3	1/12 poll.	1½	5/6	4¾	5/6
Petit,	15	8⅓	6⅔	34°	7	2¾	2⅙	1¼	1⅔	1	5⅚	5/6
V. der Laar, 1,	12½	7⅚	4½	44°	6⅓	2	3¼	..	¾	1 5/12		
V. der Laar, 2,	12½	8⅙	4⅓	36°	7	2⅓	3 5/12	¼	1⅓	1 1/12	5 7/12	¾
Coutouly, 1,	16½	9½	7	20°	8½	2⅓	3¼	..	1⅔	2	6½	¾
Pean,	17½	10	7½	30°	9	2½	4	..	1 5/12	2¼	7	5/6
Sleurs,	13½	8⅚	4⅔	16°	7 7/12	2	1¾	1/6	1	1 7/12	3½	5/12
Orme,	10⅓	5⅚	4½	85°	5	2⅔	2¾	1	1½	3¼	3½	5/6
Lowder,	11⅓	6½	4⅚	83°	6	2⅔	3 5/12	⅔	1½	4	4½	11/12
Young,	11¼	6¾	4½	79°	6⅙	2 5/12	3¼	¼	1½	1½	3¾	⅔
Evans,	11⅔	7⅙	4½	46°	5¼	2 5/12	3 1/12	⅓	1 1/6	1 1/6	4	⅔
Aitkin, 1,	11⅓	7⅙	4⅙	84°	6¼	3	3	1/12	..	..	4 1/6	..
Aitkin, 2.	11⅓	7⅙	4⅙	54°	6	3½	2¼	1⅓	..	..	4⅙	..
Aitkin, 3,	10⅚	7	3⅚	52°	5⅙	3⅓	2	½	..	..	..	..
Mayer,	16½	9½	7	18°	7½	2	3	..	1½	1⅓	6	¾
Starke,	12¼	8 1/12	4⅙	35°	6⅓	2½	2⅔	..	1⅙	1²	4	7/12
Coutouly, 2,	15½	10¼	5¼	..	..	2	..	..	1½		..	..
Coutouly, 3,	15	9½	5½	..	..	1¼	..	..			..	..
Saxtorph,	12	6¾	5¼	26°	6¼	3	1¾	¾	1½	1⅓	4¼	⅔
Osborne,	11¼	6¾	4½	75°	6	2¾	3¼	1/12	1⅓	1⅙	4 11/12	11/12
Rawlins,	10½	6½	4	48°	5⅚	2¾	2¾	1	½ & 1½	2⅔	4¾	1
Denman,	10¾	6 7/12	4⅙	70°	6¼	2 5/12	3 5/12	⅙	1 5/12	1⅙	4½	11/12
Thynne,	11	7	4	63°	6½	2⅔	3¼	7/12	1⅓	1⅙	4 5/12	11/12
Du Bois,	17¼	9½	7¾	50°	8⅓	2 5/12	3 5/6		1⅔	1½	5 5/12	5/6

TABLE III.—OF THE CURVATURES OF THE FORCEPS.

Forcipum Auctores.	Longitudo Curvaturæ.	Altitudo Curvaturæ supra lineam horizontalem.	Altitudo Curvaturæ infra lineam horizontalem.
Levret, 2, ...	$8\frac{1}{3}$ poll.	$3\frac{1}{4}$ poll.	nulla.
Smellie, 2, ...	4	$1\frac{3}{4}$	nulla.
Pugh, 1, ...	$6\frac{1}{2}$	1	$\frac{3}{4}$ poll.
Pugh, 2, ...	7	$1\frac{1}{4}$	nulla.
Levret, 3, ...	$7\frac{1}{3}$	$2\frac{1}{3}$	nulla.
Johnson, ...	$5\frac{1}{3}$	$\frac{5}{12}$	1 poll.
Fried, ...	$7\frac{1}{3}$	$1\frac{1}{4}$	nulla.
Leake, ...	$6\frac{1}{2}$	$1\frac{1}{6}$	$\frac{1}{3}$ poll.
V. der Laar, 1.	8	2	$\frac{2}{3}$
V. der Laar, 2, ...	$7\frac{2}{3}$	2	1
Coutouly, 1, ...	$8\frac{1}{6}$	$3\frac{2}{3}$	nulla.
Pean, ...	$8\frac{3}{4}$	$3\frac{1}{6}$	nulla.
Sleurs, ...	$8\frac{5}{12}$	$\frac{1}{6}$	$1\frac{11}{12}$
Young, ...	6	nulla.	$1\frac{1}{4}$
Evans, ...	$6\frac{1}{2}$	nulla.	$1\frac{1}{2}$
Mayer, ...	$7\frac{1}{3}$	$1\frac{1}{4}$	nulla.
Starke, ...	$4\frac{3}{4}$	$2\frac{1}{12}$	$\frac{1}{6}$ poll.
Saxtorph, ...	$5\frac{5}{6}$	2	nulla.
Osborne, ...	$5\frac{1}{3}$	$1\frac{2}{3}$	nulla.
Thynne, ...	$5\frac{5}{6}$	$1\frac{5}{6}$	nulla.
Du Bois, ...	8	$2\frac{5}{6}$	nulla.

These tables of measurement exhibit the various modifications (or most of them) which the forceps have undergone.

The chief peculiarities may be pointed out in a few words.

1. The most striking variation observed is in the length of the instrument, some being sixteen or eighteen inches long, and others only eleven. The object of the greater length is evidently to enable us to act before the head has descended into the pelvis. The shorter forceps can only be used when the head is in the cavity. The former instrument also possesses greater lever power, and requires greater skill and care in its management.

2. There is a considerable difference in the distance between the blades of different forceps when closed, some being nearly wide enough to admit an ordinary sized head, whilst others approximate very closely. These instruments must necessarily possess a very different degree of force; with the latter, the head may be powerfully grasped and compressed, and a

great extracting force exerted, whereas the former can do little more than extract with moderate force, when the resistance is not great. The latter are the more useful in skilful hands, but the former are perhaps safer for ordinary use.

3. To some of the instruments a second curve is added, the convexity of which is intended to correspond to the hollow of the sacrum and the concavity to the symphysis pubis, in order that the instrument may be applied in the axis of the cavity and upper outlet. The second ("curvatura nova" as Mulder calls it) has been added both to the long and short forceps. I do not believe that it is advantageous in either kind; in the latter it is often inconvenient. "It is far better to have both these instruments perfectly straight, the diversity of curves recommended by different writers answering no useful purpose."*

4. The fenestrum varies in length and breadth, in different forceps, for the purpose of embracing more of the child's head, and so adding less bulk by the introduction of the instrument, and incurring less risk of wounding mother and child; in some forceps there is no fenestrum. I rather doubt whether the object is attained by this arrangement, and when the forceps are introduced antero-posteriorly, the additional breadth of the blade which is underneath the arch of the pubis, may prove very mischievous to the sides of the outlet. The blades of some forceps do not cross in order to avoid compressing the child's head.

5. In some forceps the breadth of the blade is continued to the handle, for the purpose of containing an opening through which the other blade (which is slightly narrower) is passed so as to insure their apposition. Dr. Ziegler of Edinburgh has answered this purpose, by continuing the fenestrum to the handle.

6. Certain contrivances have been added to the handles of the instrument, to prevent their being pressed too closely together.

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[a] Denman's Introduction, seventh Ed. p. 275, note by Dr. Waller.

7. The blades have been wrapped with leather to prevent injury to the scalp of the child. This plan is now very properly abandoned, as it could not be of any use, and rather added to the difficulty of introduction.

8. Mr. Radford has altered the long forceps, and, as he states, with great advantage. The blade, which is to be applied over the occiput, is much shorter than the other, so that when it touches the neck, the other (owing to the oblique position in which the head descends) will embrace a great extent of the anterior part of the head. He has also lessened the compressing power of the instrument, by placing the joint nearer the outer end of the forceps.

9. Dr. Davis of University College, London, has shewn much ingenuity in varying the forceps, so as to meet the different circumstances in which they are required. By his kind permission, I have copied two of his plates; in one, the blades of the forceps are unequal in breadth, and may be used in malpositions especially, and in the other they are of unequal length.

In London, a modification of Levret's forceps is used for the higher operation, and Smellie's in the cavity of the pelvis. In Edinburgh, both the long and short forceps have the double curve.*

In Dublin, the long forceps is rarely used, and the short one resembles Smellie's without the second curvature.

In France, Levret's forceps, or a modification of it, is in general use.

In Germany, the forceps of Boer, Levret, Schmidt, Stark, and Siebold, Brünninghausen, Naegelè, Osiander (*Kilian;*) and in Italy, the forceps of Levret or Assalini are employed.

For myself, I prefer the long or short forceps, with the single curve, with the blades and fenestra somewhat narrow, and approximating so as to allow of a firm degree of pressure; with their edges smoothly bevelled off; and they should

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* Hamilton's Practical Observations, Part ii. p. 94.

be sufficiently strong to prevent their springing, but not so thick as to add unnecessarily to their bulk.

The hand that is to use the instrument is, however, of more importance than the instrument itself, of which it may be observed with truth, that "that which is best administered is best."

The *object of the operation* with the forceps is,

1. To facilitate delivery, when its progress is arrested by certain malpositions of the head at the brim or in the cavity of the pelvis.

2. To supply the want of uterine action, or to render it effective for the expulsion of the child.

3. To save the mother from the evil consequences of a labour too prolonged, and from the necessity of a severe operation.

4. To save the life of the child, or at least afford it a chance, and save it, if possible, from certain destruction.

That these objects are attainable will, I trust, appear from the nature of the aid afforded by the forceps, and that they have been in many instances attained, the statistics of the operation will prove.

It was not for some time after the invention of the instrument, that its power, and the limitations of those powers, were understood. The story of Chamberlen's Paris adventure is a good illustration. He visited Paris, and offered to deliver any patient the faculty chose, with his instrument: they gave him a case of distorted pelvis; he tried; and of course failed, and left the city in disgrace. Had he carefully studied the cases to which the instrument was applicable, he would have been spared the annoyance.

It is evident that the forceps possesses a twofold power:

1. That of grasping and compressing the head of the child. (*Kilian.*)

2. That of acting as a lever of the first kind, and as an extractor (*Kilian.*)

The compression exercised by it *must* be limited within the degree the head can bear without injury, and *may* be limited the form of the instrument. The extracting force will be in proportion to the firmness of the grasp, and limited by the resistance, and the danger of injury to the mother. "To lessen the volume of the child's head in the first instance, and in a way that may be compatible with life, and which certainly shall not destroy it, is the first object in contemplation in the contrivance of the structure of this instrument. The second is, to afford such assistance as shall be equal to the future completion of the delivery, when the head is thus lessened, and that without any injury to the mother, either in the introduction or application of the instrument, or final extraction of the head; for it must be obvious, that however lessened the head may be by compression, if the expulsive powers are extinguished, an extracting force must be substituted instead of them, or the woman would remain undelivered, even though the child was ever so much lessened in its volume; hence the use of that particular structure of the instrument by which the extracting force is given."*

How it is ascertained, that if there be space sufficient, such a grasp may be obtained of the child's head, without injury to it, as will enable us to extract it, and that the extracting force thus exercised is not sufficient to injure the mother; thus the forceps may supply the want of uterine pains.

Many cases occur in which the transverse diameter of the child's head is slightly greater than the antero-posterior diameter of the brim, or the transverse diameter of the lower outlet; but where a slight additional compression would enable it to pass: now if this do not exceed the amount of compression which the head will safely bear, and if the force required for extraction be not sufficient to injure the mother, such compression and extracting power may be afforded by the forceps, which will thus

* Osborne's Essays on Midwifery, p. 17.

render the uterine action effective. No doubt it requires great tact and long experience to decide upon the probability of success, but we have high authority for the propriety of the attempt in such cases. To those who lack experience, the failure of a very cautious attempt will be an adequate evidence of its impracticability, and with ordinary care no mischief will be done. Lastly, in most cases where the head is not impacted, a sufficient grasp may almost always be obtained, either at the upper outlet, or in the cavity, to enable us to change the position of the child.

I trust I have made it appear from the *nature of the aid* afforded, that the first and second objects of the operation are attainable, how far this is the case with the third and fourth, must be shewn by statistics. But before I give the results of the operation to the mother and child, it may be well to ascertain the average frequency of its occurrence. For these purposes I have searched all the records within my reach, and the result is the following tables.

Table I.—Frequency of the Operation.

a. *Among British Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of Forceps Cases.	References.
1781,	Dr. Bland, ...	1,897	12	
1787 to 1793	Dr. Jos. Clarke, . .	10,387	14	Trans. of Assoc. vol. 1.
	Dr. Merriman, . . .	2,947	21	Synopsis.
1818	Dr. Granville . . .	640	5	Report of West. Disp.
1825 to 1833	Ed. Lying-in Hospital,	2,452	15	Reports.
1828	Dr. S. Cusack, . .	398	1	Dub. Hosp. Rep. vol. 5.
1829	Do.	303	3	Do.
1826 to 1837	Dr. Collins, ...	16,414	24	Prac. Treat. on Midwf.
1834 to 1837	Dr. Beatty, ...	1,182	9	Dub. Jour. vols. 8, 12.
1834 to 1836	Dr. Ashwell, . . .	1,278	6	Guy's Hosp. Reports.
1838	Mr. Warrington, . .	88	1	Amer. Med. Journal.
	Mr. Mantell, . . .	2,510	6	Do.
1836 to 1840	Dr. Churchill, . . .	1,700	3	Rep. up to June, 1840.
		42,106	120	

b. *Among French Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of Forceps Cases.	References.
1797 to 1809	Madame Boivin,* .	20,517	96	Memorial, p. 337.
1803 to 1811	Madame Lachapelle, .	22,243½	174	Prat. des Accouch.
1808	M. Ramboux . . .	216	2	Velpeau.
1815 to 1828	M. Pigeotte de Troyes,	1,362	2	Do.
1829	M. Papavoine, . . .	24	1	Do.
1829	Hotel Dieu, Paris, . .	280	1	Do.
1830, 1831	Sig. Ciniselli, . . .	94	1	Do.
		44,736	277	

c. *Among German Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of For-ceps Cases.	References.
1801 to 1807	M. Richter, Moscow, . . .	3,195	49	Velpeau.
1811 to 1827	Moschner and Kursak, Prague,	12,329	120	Siebold's Jour. vol. 9.
1812 to 1813	C. V. Siebold, Wurtzburg, .	318	26	Do. vol. 1 to 3.
1817 to 1826	Do. Berlin, . . .	1,634	212	Do. vol. 3 to 8.
1827 to 1829	E. V. Siebold. Berlin, . . .	491	77	Do. vol. 9 to 11.
1829 to 1833	Do. Marburg, . .	344	34	Do. vol. 10 to 13.
1834 to 1837	Do. Göttingen, . .	507	37	Do. vol. 15 to 16.
1825 to 1827	Dr. Kilian, Prague, . . .	2,350	120	Velpeau.
1808 to 1814	Dr. Henne, Copenhagen, .	555	1	Siebold's Jour. vol. 2.
1826	Do.	130	4	Do. vol. 8.
1821 to 1825	Dr. Riecke, ...	219,303	344	Velpeau.
1819—20	Dr. Ritgen, Giessen, . . .	188	20	Siebold's Jour. vol. 6.
1825	Dr. Merrem, Cologne, . . .	142	5	Do. vol. 7.
1814 to 1827	Dr. Carus, Dresden, . . .	2,908	184	Do. vol. 9.
	Dr. Naegelè, Heidelberg, . .	1,411	22	Velpeau.
1825, 26, 27	Dr. Klugè, Berlin, ...	809	55	Siebold's Jl. v. 7, 8, 9.
1825—26	Professor Andrèe, Breslau, .	351	8	Do. vols. 7, 8.
1825, 26, 27	Dr. Brunatti, Dantzic, . . .	284	22	Do. vols. 7, 9.
1825—26	Dr. Theys, Trier, ...	49	3	Do. vols. 7, 8.
1826	Dr. Voigtel, Magdeburg, . .	29	3	Do. vol. 8.
1827—28	Dr. Küstner, Breslau, . . .	370	8	Do. vols. 9, 10.
1830, 31, 32	Dr. Adelman, Fulda, . . .	170	7	Do. vol. 14.
1797 to 1837	Dr. Jansen, Ghent, . . .	13,365	341	Med. Gazette, March 6, 1840. Schmidt's Jahrbücher.
		261,224	1702	

Thus, amongst British practitioners, we find 120 forceps cases in 42,196 cases of labour, or about one in 351½.

* I have omitted Baudelocque's statement, as it is included in Madame Boivin's numbers. He met with 37 forceps cases in 12,751 labours.—*L'Art d'Accouch.* vol. ii. p. 556.

Amongst the French we have 277 forceps cases in 44,736, or about one in 162.

And amongst the Germans, 1702 forceps cases in 261,224 labour cases, or about one in $153\frac{1}{2}$.

If we add the whole together, we find 2098 forceps cases in 348,156 cases of labour, or about one in 165.

TABLE II.—RESULTS OF THE OPERATION TO MOTHER AND CHILD.

Authors.	No. of Forceps Cases.	Mothers lost.	Children lost.
Dr. Smellie . . .	52	2	9
Mr. Perfect . . .	18	2	4
Dr. Jos. Clarke . .	14	2	Not stated.
Dr. Merriman . .	21	0	6
Dr. Granville . .	5	1	Not stated.
Dr. Ramsbotham .	11	3	5
Ed. Lying-in Hosp.	15	Not stated.	5
Dr. Maunsell . .	4	0	1
Dr. Beatty, Sen. .	111	0	0[a]
Dr. Gooch . . .	6	1	0
Dr. Ashwell . . .	6	Not stated.	3
Mr. Warrington .	1	0	0
Dr. R. Lee . . .	42	3	31
Dr. Churchill[b] . .	9	0	0
Mad. Boivin . . .	96	Not stated.	20
Mad. Lachapelle .	79	14	23
Dr. Boer	19	2	5
Dr. Siebold . . .	312	11	47
Dr. Ritgen . . .	20	3	4
Dr. Andrée . . .	8	1	4
Dr. Brunatti . .	23	1	6
Dr. Voigtel . . .	3	0	0
Dr. Küstner . . .	8	2	1
Dr. Adelmann . .	7	1	1

[a] As regards the children, Dr. Beatty's expression is: "all the children that we had any reason to think were alive at the commencement, were born living, and none of the whole number had any injury or mark whatever inflicted by the instrument."—*Dublin Med. Trans.* New Series, vol. i. pl. 1, p. 52.

Dr. Beatty's eminence in his profession and his personal character, are sufficient guarantee for the accuracy of this statement, and therefore I have given the statistics of British practice the benefit of his report.

[b] I have added the forceps cases which have occurred to me in private practice, from my note book.

Now if we add together the number of forceps cases where the result to the mother is stated, we shall find, that of those detailed by British practitioners, of 294 forceps cases fourteen mothers were lost, or about one in twenty-one.

Amongst the French and Germans, in 480 cases thirty-eight mothers were lost, or about one in fourteen.

Whilst of the children, the British statistics give sixty-four lost in 284 cases, or about one in $4\frac{1}{3}$; and foreign statistics 111 in 576 cases, or about one in five.

The total result is, that in 774 forceps cases, 47 mothers were lost, or about one in sixteen and a half; and in 860 cases, 175 children were born dead, or about one in five.

It will be admitted, I think, that these tables exhibit British practice in a very favourable light.

I am unable to explain the greater proportional frequency of operations in some of the German reports, except by supposing that their hospitals, being on a small scale, are reserved for the worst cases met with in extern practice among the poor. Were I quite sure of this being the case, however, I should have omitted them from Table I., as they would, then, manifestly be an unfair record of the proportional frequency.

It would be unjust to compare the frequency of forceps cases among the German and British, without recollecting the minor degree of mortality amongst the children in the practice of the former, and the very much smaller number of crotchet cases. It would seem, that although the Germans use the forceps much more frequently than we do, they often thereby avoid a much more fatal operation.

The rate of mortality exhibited by the last table is, undoubtedly, an over estimate, as many of the deaths included in it were unconnected with the operation, but as this is not stated, except by a few authorities, though probably equally true of all, I have preferred quoting the numbers given, and appending this note.

It is greatly to be regretted, that the statistics of the result

of the operation to the mother and child are so limited. Many writers who have carefully recorded the *number* of operations, have very carefully omitted to state whether the mother recovered, or the child was saved, leaving us to make the inference that both were saved. But we know that such an inference would be incorrect. Can any one believe, that whilst British practitioners lose one woman in twenty, Mesdames Boivin and Lachapelle lost none in 270 cases?

I have, therefore, omitted in the latter table all those who have neglected to state the results.

If we fail in our endeavours to extract the infant with the forceps, we have no resource but to employ the perforator and crotchet, and, therefore, in estimating the utility of the forceps, we must also compare it with its *alternative* operation, inasmuch as every successful case of the former may be considered as so much gained from the latter.

Now, in craniotomy all the children are destroyed, and one in five of the mothers is lost; whereas we have seen, that by the forceps we save at least four out of five of the children, and nineteen out of twenty of the mothers. If we had more minute reports, the success would undoubtedly appear much greater.

The special *advantages* of the forceps are said to be:

1. That they are easily applied.

2. That their powers are calculated to attain the object for which they are used.

3. That they do this by imitating the natural powers.

4. That they aid the expulsive efforts of the uterus better than any other instrument, and supply their place, which no other instrument can.

5. That they are less liable to slip than the vectis.

6. That they are attended with less fatal consequences than the perforator and crotchet.

On the other hand, those writers who have defended the use of the vectis, as compared with the forceps, have enumerated several *disadvantages;* such as,

1. The difficulty of this application in all cases, and in some the impossibility of using them, owing to the position of the head, or want of space.

That the introduction of two blades may be more difficult than that of one, in *certain* cases, is very evident, but that there is much greater difficulty in introducing the forceps than the vectis, in the majority of cases proper for its use, I do not believe. The latter part of the objection is of no force, because that cases where the introduction of the instrument is impracticable, are not cases in which its employment is contemplated, and, undoubtedly, when the impaction was so great as to prevent the application of the forceps, it would more surely render the vectis useless.

2. The risk of bruising the os uteri in the application of the forceps.

"In almost all cases where instruments are employed, the head of the child is pushed down in a conical form, so that the os uteri is often not dilated more than the breadth of the apex of the humid scalp, which is engaged in it; the dilatation is painful and difficult, on account of the os uteri being thickened. When the forceps is introduced in these circumstances, the parts suffer much contusion, and often laceration, that must in general prove fatal."[a]

I do not think that there is much risk of injury, if the operator be a competent person. Dilatation or dilatability of the os uteri being an essential condition of the operation, Mr. Dease's supposition would involve great want of skill and care in the operator.

3. That when the forceps are applied, they are apt to slip their hold.

This may sometimes happen, but surely it is much more likely to occur with the vectis.

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[a] Dease, Obs. in Midwifery, p. 40.

4. That the pressure upon the child's head may destroy life.

No doubt; but as the pressure is regulated by the resistance, this ought never to happen, except in cases in which the crotchet must otherwise be used, and in which the vectis would be powerless.

5. That by adding to the volume of the head, they are apt to lacerate the perineum.

That the compression exercised upon the head of the child is amply sufficient to compensate for the additional bulk of the blades, there can be no doubt, even in those cases where the extraction is most easy; but we have an additional safeguard in the removal of one of the blades just before the head passes over the perineum.

6. That as they can never be used secretly, they have a tendency to alarm and intimidate the patient, and in this are inferior to the vectis.

When speaking of the vectis, I mentioned their secret employment amongst their disadvantages, and I now quote this objection for the purpose of entering once more my earnest protest against the employment of any instrument secretly.[a]

Having now given the history of the operation, stated its objects, and shewn that they are attainable, from the nature of the aid afforded, and from numerical calculations; and having enumerated the positive and comparative advantages of the operation, with the objections that have at different times been made to the use of the instrument, I shall next proceed to mention the *cases in which the forceps have been considered applicable.* I would wish, however, that it should be remembered, that as I am not writing the history of my own experience,

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a "On est assez dans l'usage de cacher le forceps á la femme dans le crainte de l'effrayer; mais nous croyons, que rien ne peut la rassurer d'avantage que de le lui faire connoitre avant et de le lui laisser examiner, puisqu'on ne peut s'en servir sans qu'elle s'en apperçoive."—*Baudelocque l'Art des Accouch.* vol. ii. p. 136, note.

but recording that of others, so, I am not to be considered as necessarily the advocate of the forceps in all these cases. I have selected them from authors of the highest authority, and their evidence is altogether independent of support from me.

I must also premise, that in no case is the forceps (or, indeed, any instrument) to be applied, until we are perfectly satisfied that the obstacle cannot be overcome by the natural powers, with safety to the mother and child.

1. When the head is unable to enter the brim of the pelvis from malposition, (suppose with its long diameter corresponding to the antero-posterior diameter of the upper outlet), which is not rectified by the pains, the long forceps may be applied to change the position, provided the os uteri be fully dilatable, and that the change cannot be made by the hand alone. (*Giffard ; Kilian.*)

2. When the head is in the upper outlet, fitting closely, but not impacted, and the pains are inadequate to overcome the resistance. A little help with the forceps, applied laterally, (in relation to the pelvis,) will often overcome the difficulty. (*Kilian.*)

"The first material case where the forceps may be applied to advantage, is where the basis of the skull is detained at the brim, and the round hollow part of the head is fixed pretty low into the pelvis, and the os uteri, as it were, wholly obliterated by the effects of the labour pains."[a]

3. When the head presenting at the brim, is somewhat too large for the antero-posterior diameter of the pelvis; if the excess be not more than may be remedied by the allowable degree of compression, the operation may be successful. (*Smellie.*[b])

"The cases, of all others the most frequent in their occurrence, consist of those laborious labours, in which the child's head is detained at the brim of the pelvis, the face lying to the one and the occiput to the other side ; a large head, a narrow pelvis, and other causes impeding the descent."[c]

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[a] Cooper's Compendium of Midwifery, p. 129.

[b] Midwifery, vol. i. p. 172.

[c] Blundell's Obstetricy, p. 502.

It will require some experience to ascertain this, before a trial, but as the alternative is the crotchet, it is surely worth while to make a cautious attempt with the forceps, from which no harm need result in case of failure.

In all these cases it will be necessary to use the long forceps; in the following, the shorter are sufficient, but of course either may be employed.

4. When the head is in the cavity of the pelvis, and is there detained by want of space, if the compression required for its extraction be not greater than the head of the child will bear with safety, the forceps may be safely used, either laterally, obliquely, or antero-posteriorly.[a]

"The vertex or presenting part of the child's head must then not only have entered the upper aperture of the pelvis, but the head itself must have descended so far into the cavity, as that the basis of the cranium shall be at least parallel with the brim of the pelvis, while the vertex is touching, or resting upon the spinous processes of the ischia. This situation is always discoverable by feeling the ear of the child, which, at this period of the labour (before the term is completed) is invariably found a little on one side of the symphysis pubis; whenever an ear then can be perceived by the touch, so large a portion of the volume of the head must be engaged in the cavity of the pelvis, that the basis of the cranium is certainly and invariably within reach of the grasp of the instrument, in which case, if applied in the manner directed, the purchase will be so great, and the hold so perfect, that the delivery must be speedily and safely accomplished." (*Osborne.*[b])

Siebold is said to have been able to reduce the transverse diameter of the head of the child six lines with Levret's forceps; Osiander, nearly an inch; Baudelocque, four and a half lines; Thouret and Velpeau, five or six lines. Flamant could only succeed in reducing the diameter five and a half lines. Of

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[a] Hamilton's Pract. Obs. Pt. 2, p. 106. [b] Essays on Parturition, p. 90.

course the amount will be in inverse proportion to the degree of ossification.

5. In face presentations, the longest diameters of the child's head are brought to bear upon the pelvis, adding greatly to the difficulty of its transit through the lower outlet, even when the pelvis is large, and still more, if it be under the average dimensions. In such cases, aid may often be given by the forceps, so as to save the child's life, and to mitigate the suffering and its consequences to the mother. It is not, however, to be assumed, that because the child comes faceling, that assistance will be necessary; the majority are borne by the natural efforts.

6. The same observations apply to certain, though more rare cases, when the forehead is turned towards the symphysis pubis.

7. But the utility of the forceps is seen more clearly in the cases to which I have before alluded, where the pains at first very strong, have gradually declined so as to be nearly, or altogether powerless, but not from the resistance occasioned by a narrow pelvis. There may be sufficient space, the os uteri and external parts well dilated, and yet the labour does not advance. In such a case, the second stage cannot be very much prolonged without certain symptoms arising indicative of danger to the mother, and here we are able to relieve her without difficulty or risk, and to save the child (if it be alive at the time) by the timely use of the forceps.

In such cases (and every one must have met with them) I think I may say, that the operation adds absolutely nothing to the danger to either mother or child. (*Flamant*;[a] *Froriep; Kilian.*)

" L'inertie ou le defaut de contractions de l'uterus est un des cas pour lesquels on applique le plus frequemment le forceps."[b]

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[a] Memoire pratique sur le Forceps, p. 37.

[b] Velpeau Traitè des Accouch. p. 418, Brussels Ed.

8. When the hand or arm descends with the head, the additional bulk will require more expulsive force, and in some cases this must be afforded by the forceps.

9. In some cases of convulsions, hemorrhage, and rupture of the uterus, where the head is within reach, the forceps are found extremely useful in expediting the delivery. (*Flamant; Froriep; Kilian.*)

10. In certain cases of breech presentation, it is very difficult to extract the head after the body is expelled, either from malposition or from the incompressibility of the base of the skull; in these cases the difficulty may be removed or overcome by the forceps.

11. The forceps may be used after vaginal hysterotomy or symphysiotomy. (*Flamant.*)

12. In prolapse of the funis, when it is an object to hasten the labour in order to save the child; the pulsation of the cord will shew whether the operation affords a chance.

These are, I believe, all the cases in which the forceps have been used or recommended by high authority; to complete the subject, I may mention certain cases in which they ought not to be employed.[a]

1. In distortion of the pelvis, or when its calibre is diminished from any cause, such as tumors, exostosis, &c., if the narrowing of the pelvis be too great to admit of the passage of the child's head, when moderately compressed; such cases can only be terminated by the perforator. (*Froriep; Kilian.*)

2. When the os uteri is rigid and undilatable, or when the

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[a] "First, then, it should not be used when there is a certainty, from the indications already mentioned, of the child being dead. Secondly, it cannot be used when the impediment is from any distortion of the bones that form the pelvis. Thirdly, when it proceeds from narrowness of the pelvis, that is, when the sacrum and pubis are too near each other. Fourthly, when the head has been so long in the passage, that the circumjacent parts are swollen. Fifthly, and lastly, when by any means the head cannot advance so far as to be within reach of the instrument."—*Sir Fielding Ould's Treatise on Midwifery*, 1742, p.157.

passages are much inflamed and swollen, the forceps ought not to be used. (*Kilian.*)

" If you find these parts rigid, you must not even think of using the forceps or lever, the very thought is almost sufficient to bruize, lacerate, and destroy." (*Blundell.*[a])

3. In some cases, where the patient has been mismanaged, and allowed to remain too long, the system is in such a state that we are obliged to have recourse to the most expeditious mode of delivery. In these cases (especially if there be a doubt of success with the forceps) it may be wiser to have recourse to the perforator. But such cases could scarcely happen under the care of a well educated practitioner, nor are they at all frequent.

4. If the child be dead, we are advised to prefer craniotomy: if we are quite certain that the child is dead, the principal objection against craniotomy is removed, but this, it is not always easy to determine. The stethoscope is a most valuable source of information, but it must be remembered, that while its positive evidence is unquestionable, the negative evidence, (i. e. no sign been audible) is not equally so.

Dr. Collins, whose experience has been very extensive, remarks: " I know of no case where the advantage derived from the use of the stethoscope is more fully demonstated, than in the information it enables us to arrive at with regard to the life or death of the fœtus in the progress of tedious and difficult labours."[b]

We next come to consider the *period for operating.* " It is one of the nicest points in practice, correctly to decide, whether any given case of protracted labour may be trusted with safety to the further exertions of the natural agents, or whether the means of art ought to be promptly brought to their assistance. In determining this important question, the whole

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[a] Obstetricy, p. 496; Baudelocque l'Art des Accouch. vol. ii. p. 139.

[b] Practical Treatise on Midwifery, p. 18.

of the symptoms are to be collectively and severally considered, and their different tendencies accurately examined, that we may equally escape the imputation of haste and indiscretion on the one hand, and of delay and indecision on the other; yet, let us ever bear in mind, that more injury may possibly accrue from too long delay, than can arise from premature assistance."[a]

"But though it is our duty to avoid, if possible, the use even of those instruments which are intended to be employed without injury to mother or child, it would on the other hand be absurd to defer their use till the child was dead, and the mother reduced to a state not of apprehended, but of real danger; or which is worse, if she should survive, her life would be rendered miserable, from the consequences done before the instruments were used."[b]

The decision of this point must, in a great measure, be left to the judgment and experience of the practitioner. No very definite rule can be laid down: we find both individuals and nations differing upon the subject; the Germans operate more frequently and at an earlier period than the British, but on the other hand, they have much fewer crotchet cases.

In forming our decision, there are several points for consideration:

1. *The local circumstances of the case,* such as the position of the head, space in the pelvis, complications, &c.; these constitute the principal grounds of necessity for the operation, and have been enumerated.

2. *The general condition of the mother.*—During the first stage we find little or no effect produced upon the system of the mother by the duration of the labour. After the second stage, however, has lasted for some time, (say from fourteen to twenty hours,) a new series of symptoms arise; she becomes feverish, and the pulse quickens, the tongue becomes dry and furred,

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[a] Ramsbotham's Practical Observations on Midwifery, vol. i. p. 256.

[b] Denman's Introduction to Midwifery, p. 275, seventh Ed.

the vagina hot and dry, the discharge changes in colour, &c. If the labour be allowed to continue, vomiting occurs, the abdomen becomes tender, the pains are suspended or feeble; the head aches; the pulse rises to 120 or 140; restlessness and jactitation supervene, &c. &c., and the patient is in imminent danger; and these symptoms may arise, whether the delay be caused by insufficient pains, by malposition, or by narrow pelvis.

Our great object in the use of the forceps, is to anticipate these formidable symptoms, and to rescue the patient from the danger. I think then, that, as regards the mother, we may conclude:

1. That as these formidable symptoms are not consequent upon a prolonged first stage; therefore, "before the completion of the first stage of a labour, that is, before the os uteri is perfectly dilated, and the membranes broken, the use of the forceps cannot properly come under contemplation." (*Denman.*[a]) But I would remark, that where the obstacle is at the upper outlet, the second stage virtually commences when the os uteri is fully dilatable, as the head *cannot* pass through it, and the usual symptoms may arise if the labour be sufficiently prolonged.

2. That when the second stage has lasted so long, as to prove the inadequacy of the natural powers, or at all events, as soon as the symptoms of a prolonged second stage make their appearance, (quick pulse, dry tongue, fever, &c.,) then we ought promptly to interfere.[b] "A practical rule has been

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[a] Introduction to Midwifery, p. 275.

[b] Dr. Hamilton advocates an earlier interference, and his opinion is worthy of attentive consideration. He says: "There is too much reason to believe, that British practitioners, from their unwillingness to give pain, or hurt the feelings of their patients, are apt to procrastinate, and to lose the favourable time for safe and effectual interference. No intelligent practitioner would wait in cases where the labour throes cease to have any influence in advancing the delivery of the head of the infant within reach of the forceps, till there be heat or tenderness of the passages," and still less, till "the patient's strength be much exhausted."—*Practical Observations*, Part 2, p. 96.

formed, that the head of the child shall have rested for six hours as low as the perineum, that is, in a situation which would allow of their application, before the forceps are applied, though the pains should have altogether ceased during that time."[a]

I would rather place dependance upon the symptoms, than upon the duration of the labour merely; some patients will shew more signs of suffering after six hours, than others after twelve or sixteen. Dr. Collins observes: "Let it be carefully recollected, at the same time, that so long as the head advances ever so slowly, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine; interference should not be attempted, unless the *child be dead.*"[b] At the same time, as we know that after a certain duration of the second stage, these unpleasant symptoms do arise, it cannot be altogether omitted in our estimate of the case, and is a reason for great vigilance.

3. We must not omit the consideration of the life of the child; after the second stage has lasted a certain time, there is considerable risk to the child, and it may even die before the symptoms on the part of the mother become very formidable, though this is not always the case. This condition may sometimes be detected by the stethoscope, the action of the heart becoming feeble and irregular. In such a case, if no counter-indication existed, we should be justified in interfering for the purpose of saving its life, provided the operation were practicable.

Method of operating.—When once we have determined upon the propriety of operating, the operation itself is not very difficult; it requires a thorough *tactile* knowledge of the pelvis, some manual tact and steadiness. I shall first describe the application of the long forceps at the brim, and then (the long or short forceps) in the cavity of the pelvis.

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[a] Denman's Midwifery, p. 275. [b] Practical Treatise on Midwifery, p. 17.

1. *The long Forceps.*—These may be applied either in the transverse or antero-posterior diameter of the pelvis, (*Baudelocque.*[a]) If our object be compression, or a change of the position, the antero-posterior diameter will be the best; but if additional force is requisite, they may be applied transversely (i. e. over the occiput and forehead of the child.) In this position, as there is more space, their application is more easy; but it must be remembered, that in proportion to the grasp we take of the head in its longitudinal diameter, we diminish this diameter, but increase the transverse, and so far may add to the difficulty of the descent of the head. Therefore, only sufficient force should be used to enable us to extract.

"When about to apply the long forceps, it is to be remembered, that the difficulty exists at the brim of the pelvis, that the antero-posterior diameter, or that from the symphysis pubis to the promontory of the sacrum, is diminished; in the application of the instruments, therefore, care should be taken that they be placed over the head in such a situation that they may occupy the most roomy part of the pelvis, which will be its lateral diameter. In a natural presentation and situation, one blade of the instrument will consequently be placed over the forehead, the other over the occiput."[b]

The patient is to be placed on her left side, (or on her back,) close to the edge of the bed; the forceps, warmed and oiled, are to be within reach, and the operator should introduce two or three fingers of his left hand or his whole hand, during an interval of pain, along the head of the child within the os uteri, for the purpose of protecting it, and guiding the blade of the forceps.

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[a] The French practitioners apply the forceps with reference to the diameters of the head of the child. The British, Germans, and Russians, refer rather to the diameters of the pelvis.

[b] Waller's Edition of Denman, p. 279, note.

The upper or anterior blade is then to be passed along the inside of the fingers or hand, in the axis of the upper outlet, until it glides over the part of the head to which we wish to apply it. It is then to be retained '*in situ*' by an assistant, and the hand or fingers withdrawn; the right hand (or two fingers) is next to be introduced on the opposite side, and the second blade passed carefully up and applied to the head. If the blades have been properly placed, they will lock, but if not, one must be withdrawn and re-introduced. When locked, the handles may be tied together or grasped firmly, and extracting force applied, of which I shall speak presently.

The most important points to remember in the application of the long forceps are:

1. To guard the os uteri with one hand.
2. To introduce the upper or anterior blade first.
3. To grasp the blades along the axis of the upper outlet.
4. To regulate the force of the grasp, according to the circumstances of the case.

2. *The short Forceps.*—These may be passed in accordance with the transverse, oblique,[a] or antero-posterior[b] diameters of the pelvis. In many cases where it would be impossible to pass them laterally, we may succeed in passing them antero-posteriorly, and in extracting the child; but we must bear in mind

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[a] "The blades of the forceps ought always, if possible, to be introduced along the ears, by which means they approach nearer to each other, gain a firmer hold, and hurt the head less, than in any other direction; frequently, indeed, not the least mark of their application is to be perceived, whereas, if the blades are applied along the forehead and occiput, they are at a greater distance from each other, require more room, frequently at their points press in the bones of the skull, and endanger a laceration in the os externum of the woman."—*Smellie's Midwifery*, vol. i. p. 165.

[b] One part thus passed over the head and under the os pubis, the other is to be passed over the os sacrum, and thus a laceration will be avoided; when these are passed, they are then to be brought together, &c. &c.—*Chapman on Midwifery*, p. 19, also *Baudelocque l'Art des Accouch.* vol. ii. p. 136.

the observation made when speaking of the long forceps, that pressure in the long diameter of the child's head (i. e. when the forceps are introduced obliquely or antero-posteriorly) increases its lateral or transverse diameter, and so far augments the obstacle to its extraction.

The bladder and rectum should be evacuated before the attempt is made, and the forceps warmed and oiled as before said. The patient is then to be placed near the edge of the bed, and after a careful examination our decision formed as to the part to which the forceps are to be applied. One or two fingers are then to be introduced into the vagina during an interval of pain to guide the forceps and protect the soft parts.

"The forceps must be introduced, one blade after another, first introducing the fingers of each hand to carefully guard the bows past the os uteri and fairly over the side of the head, for should the os uteri get between the head and forceps, it would at once prevent any firm hold of the head, and consequently fail you in the attempt, and also bruise the part that intervenes, so as to endanger an excoriation and great inflammation." (*Pugh.*[a])

We must always be careful, that "the point of the instrument be constantly kept in contact with the head; to effect which it will be necessary to remember, that the child's head is in every part convex, and, therefore, as the instrument advances, the handle must be raised, or otherwise in its progress it may pass on, instead of going under, the os uteri, if any part should remain in contact with the child's head." (*Osborne.*[b]) The forceps are at first introduced in the axis of the lower outlet, but this direction must be almost immediately changed into that of the upper outlet, or there will be danger of wounding the posterior wall of the vagina. The upper or anterior blade should be introduced first, and then the lower or posterior one. When both are applied, they ought to be opposite, and if so, will easily lock, but "if, on endeavouring to lock the forceps, it should be

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[a] Treatise of Midwifery, 1754, p. 83.

[b] Essays on Parturition, p. 99.

found, that they do not readily come together, they have not been properly introduced, no force or violence should be used to bring them together; but the second blade should be withdrawn, and introduced afresh." (*Merriman.*[a]) Great care must also be taken, that the soft parts or hair are not included in the lock, as this will give great pain. The lower part of the handles may be tied together by a ligature, so as to determine the force of the grasp, and it has this advantage, that it fixes the degree of compression, and leaves the operator at liberty to occupy himself with the extraction only. If, however, the head fit tightly, and more compression than merely that which is sufficient for extraction be necessary, it will be useless; the operator must then regulate the compression with his hand, and extract at the same time.

"When the forceps are first locked, they are placed far backward, with the lock close to or just within the internal surface of the perineum; and they can have no support backwards, except the very little which is afforded by the soft parts. The first action with them should, therefore, be made, by bringing the handles, grasped firmly in one or both hands to prevent the instrument from playing upon the head of the child, slowly towards the pubes, till they come to a full rest. Having waited a short interval with them in this situation, the handles must be carried back in the same slow but steady manner to the perineum, exerting, as they are carried in the different directions, a certain degree of extracting force, and after waiting another interval, they are again to be raised towards the pubes, according to the situation of the handles." (*Denman.*[b])

We must remember, "that the force employed in extracting the head be always and steadily from blade to blade, but with intervals resembling the labour pains, and constantly in the direction of the axis of the pelvis, till the occiput begins to emerge

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[a] Synopsis of difficult Parturition, p. 167.

[b] Introduction, p. 281.

from under the arch of the pubis, when the handles are to be raised over the symphysis pubis with the right hand, while the left is applied to strengthen and preserve the perineum." (*Osborne.*[a])

"The whole power or force which the instrument enables us to use, ought not to be exerted in the first instance, but such a degree as any individual case may require, which can only be known by first trying a moderate degree of force, increasing it slowly and deliberately according to the exigence of each case." (*Denman.*[b])

Whilst we thus employ the power we possess gradually, steadily, at intervals, and in the direction of the axes of the pelvis, we must not forget the danger (in some cases at least) from pressure or contusion. Our guide in this matter is the pulse, which rapidly rises, if injury be inflicted.

"If the pulse be 120 or 130 before you commence operations, it is clear that you cannot, from counting the beats, take an intimation whether the soft parts have or have not sustained injury; but if, before the forceps be applied, the pulse is under 100 in the minute, then should contusion be produced by your efforts with the instrument, the rise of the pulse will indicate it. After every effort with the forceps, therefore, count, waiting two or three minutes, so as to allow the beats to subside after muscular exertion, and count completely round the circle. If you find it below 100, no serious injury has been inflicted; if the frequency is increasing, although it do not necessarily follow that serious injury has been inflicted, yet the existence of contusion becomes probable, and further efforts must not be made without much further consideration." (*Blundell.*[c])

When our efforts have been so far successful, that the occiput emerges from the lower outlet, if there be pains, it is better to remove one blade (the posterior one when they are

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[a] Essays on Parturition, p. 100.

[b] Introduction, p. 280.

[c] Obstetricy, p. 505.

applied antero-posteriorly) of the forceps, to lessen the risk of laceration, and the perineum should be carefully supported by an assistant, whilst the operator uses the other blade as a lever if necessary.

If the head be high up in the pelvis, we must take care that the usual half turn be made as it descends, so as to bring the face into the hollow of the sacrum.

In breech cases where the head is detained, the operation is not very different; the blades are to be passed up antero-posteriorly or laterally, and locked across the chin or back of the head, and extracting force applied, gently, firmly, and at intervals, not forgetting the natural turns, so as to bring the face into the hollow of the sacrum, if possible.

Difficulties.—"The difficulty of applying the forceps is most frequently occasioned by attempting to apply them too soon; or passing them in a wrong direction; or by entangling the soft parts of the mother between the instrument and the head of the child, against all which accidents we are to be on our guard." (*Denman.*[a])

1. The first difficulty we meet with is in the introduction of the blades. There may not be space enough, and if we find this to be the case, after a fair and careful trial, we are not to persist, at the risk of injury to the mother or child, but craniotomy must be performed.

When the head is pressed down against the tuberosities of the ischium, there may be some difficulty in passing the blades between them, and if the head cannot be raised up during an interval of pain, the forceps had better be applied antero-posteriorly, or both blades being introduced posteriorly, we may gradually slip them to either side.

I do not speak of the difficulty of applying the forceps when the os uteri is rigid, because it should never be attempted.

2. As I have already mentioned, there may be some dif-

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[a] Introduction, p. 279.

ficulty in locking the blades, and then one of them must be withdrawn and re-introduced. It is quite possible to deliver the child without locking the blades, but there is more chance of injury, and the instrument is more apt to slip.

3. The extraction may be difficult or even impossible. The great value of experience in such cases is, that it teaches us how far we may carry our efforts without injury. Perhaps a little more compression or a little more force may crown our efforts with success, provided that it do not exceed safe limits. But great care and caution will be necessary, and if we find our efforts fruitless after a fair trial, we shall then be justified in having recourse to the perforator, nor will the patient be the worse for the failure, if the attempt have been judiciously made.

The principal *dangers to the mother* are:

1. In the introduction of the blades, if it be not effected in the axis of the upper outlet; the vaginal parietes may be lacerated, and if the cervix uteri be not guarded by the hand, the blade may be pushed through it, or it may be included between the end of the blade and the child's head. Cases of malpractice illustrative of these dangers might easily be quoted, but it is sufficient for my purpose to mention them as a caution.

2. The soft parts in the pelvis may be bruised or lacerated in the extraction.

3. The perineum may be lacerated.

The *dangers to the child* arise:

1. From want of care in introducing the blades, by which the scalp may be bruised or torn, or an ear cut off.

2. From excessive compression, by which the skull may be indented, the bones fractured, or death from pressure induced.

Dr. Blundell has given a distressing picture of the accidents which may result from an incautious or maladroit use of the forceps.

"The grand error you are apt to commit, in using the long

forceps, is force. In violent hands, the long forceps is a tremendous instrument; force kills the child, force bruises the softer parts, force occasions mortification, force breaks openth e neck of the bladder, force crushes the nerves; beware of force, therefore, *arte non vi.* Other errors, too, there are, against which I beseech you to guard. You may use the forceps without heed; you may try to use it when the parts are rigid, and the os uteri not fully expanded; you may attempt to apply it, without knowing the position of the head; you may oscillate the instrument too extensively from side to side; you may draw without intermission, instead of imitating the pains; you may close the handles too forcibly by the hand or ligature; you may hurry the head through the outlet; you may neglect to throw the face towards the sacrum; you may forget the perineum; you may fail to conduct the head, when it emerges, towards the abdomen and the nerves, by drawing it too much upon the perineum."[a]

After-Treatment.—The first symptom which will require our attention is the shock caused by the operation. If it be great, a combination of opium with ammonia will be found the best medicine, and wine and water in moderate quantity may be allowed. If it be not severe, perfect quiet may be sufficient, and the subsequent management will be the same as after ordinary delivery, with increased caution, however, and daily attention to the state of the vagina.

If there be any soreness or inflammation, warm water injections should be used twice a-day.

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[a] Obstetricy, p. 509.

Art. VIII.—*On the Treatment of Various Diseases.* By Robert J. Graves, M. D.

[Continued from vol. xiv. p. 393.]

SUDDEN AND VIOLENT DELIRIUM SUCCEEDING MACULATED TYPHOUS FEVER.

It may be doubted, whether any writer has illustrated with sufficient details the fact, that delirium, of a most violent and dangerous description, sometimes suddenly supervenes in patients, who, to all appearance, have passed favourably through the various stages of maculated fever. I published on a former occasion, the case of a student in Trinity College, who was thus attacked on the eighteenth day, at a time when he seemed to have passed the crisis favourably, his pulse having fallen to sixty, and all other symptoms of fever having disappeared; since that observation was made, I have seen so many cases of a similar description, that I think it right to impart whatever additional experience has taught me, concerning the history and treatment of this singular species of delirium. It will appear evident, from the nature of the means successfully employed in treating this affection, that it has little or no affinity to the delirium which, in the first stages of fever, so often accompanies true inflammation or congestion of the brain, but is rather allied to *delirium tremens*, *delirium traumaticum*, and *acute puerperal madness*. As in each of these the delirium is preceded by the operation of some cause, which acts unfavourably on the nervous system, so in the delirium we are now about to consider, the pre-existence of fever may be assumed to act in a similar manner; neither does maculated fever seem more inadequate to produce so serious an effect, than the act of parturition, the presence of a wound or fracture, or the long-continued abuse of intoxicating liquors, for no severe typhus ever runs its course, without bearing heavily on the nervous system. The facts I am to relate, ought to make phy-

sicians extremely cautious about pronouncing fever patients out of danger, for even after a crisis, occurring in due time, and apparently the most satisfactory and complete, delirium may suddenly arise, and may place the patient in the greatest peril, the physician having perhaps taken his leave, in the full assurance, that his visits were no longer necessary.

Case I.—Four years ago, I attended, with the late Mr. King, a gentleman in Grafton-street, who had fever without any remarkable symptom, or anything that required the adoption of active measures; he had maculæ, it is true, but the patient was young, and went through the disease favourably; on the sixteenth day, his pulse had fallen to sixty, and all danger seemed over. He had no thirst; his tongue was moist; eyes clear, and not the slightest headach, or appearance of cerebral determination: in fact when I visited him on the morning of the seventeenth day, every thing betokened a speedy recovery. I must observe, however, that in this, as well as in most cases of the kind I have witnessed, there was a certain degree of nervous excitement present, tending to produce want of sleep, and consequently on leaving him at my evening visit, I directed the nurse to give him an opiate draught; this was unfortunately omitted; the young gentleman became gradually more restless and agitated, began to rave, and was found by Mr. King, next morning, in a state of high delirium. His pulse was still rather slow, not more than sixty in a minute; his skin was cold; his countenance collapsed; and he had been during the night wholly sleepless. We had great difficulty in managing this patient, and it was only by means of great attention, stuping his legs, a nutritious diet, wine, and black drop, exhibited freely and repeatedly, that his life was saved.

Case II.—Another case of the same kind, and calculated to excite great interest, was that of Mr. Buckton, a pupil of the Meath Hospital, remarkable for his industry and punctual attendance at hospital. This gentleman was attacked with the prevailing fever, and like most patients, exhibited maculæ about

the fifth day. There was, however, nothing very remarkable in his disease, no symptoms of anomalous character, or of a severity requiring very active measures. When first attacked, he felt rather nervous, but this was very little to be wondered at in a person who had been studying intensely for a considerable time.

At a very early period he exhibited a tendency to tremors and subsultus tendinum, but all his other symptoms were mild, and by strict attention, and the kind care of his fellow-students, he went through the disease favourably, and appeared quite free from danger on the sixteenth day. On the seventeenth day, I found him, at my morning visit, in a very promising condition, his pulse down to sixty; his tongue moist; his skin of a natural temperature, and his eye clear, and nothing present but a certain degree of nervous excitement. To counteract this tendency, Dr. M'Dowel and I had found it necessary to give him every night, an enema containing twenty-five drops of tincture of opium. Unfortunately this was omitted for one or two nights about this period; the fever resolved itself, but it resolved itself during the period of sleeplessness, and a certain degree of nervous excitement. I saw him on the morning of the eighteenth; I thought there was a good deal of anxiety and quickness of manner about him, with some slight increase in the muscular tremors; I therefore wrote to Dr. M'Dowel, and begged him to see that he took his opiate that night. Before this was done, he grew much worse; in the evening he became highly excited, then quite delirious, and towards morning it was necessary to call in the assistance of three or four persons to keep him in bed. Dr. M'Dowel continued to attend him with great care and skill, and had sufficient influence over him to make him swallow the requisite medicines, which no one else could. Opiates were at first tried, but failed; we then commenced with the free exhibition of tartar emetic, and extract of belladonna; in the course of twenty-four hours he took five or six grains of the latter; we afterwards omitted the tartar

emetic, and substituted black drop in its place : this succeeded, and after a violent attack of delirium, which lasted for thirty-eight or forty hours, he fell into a deep sleep, from which he awoke refreshed and rational. It was necessary, however, to repeat the narcotics for several nights, and they were not omitted until his convalescence became so confirmed, as to remove any apprehension of a relapse.

Here are two cases in which the disease declines, and the patient is regarded as nearly convalescent, when suddenly cerebral symptoms of a most alarming character manifest themselves. The fever subsides, but with nervous excitement and insomnia, circumstances which have been long observed as characteristic of an imperfect crisis. The point, however, which I wish to direct attention is, that a person not thoroughly acquainted with the nature of this affection might be led into a very important error. He might, perhaps, suppose this to be inflammatory excitement, to be treated by leeches, cold to the head, and other antiphlogistic measures. In Mr. Buckton's case, indeed, the symptoms were so violent, that I advised leeching, but Dr. M'Dowel did not apply them, and perhaps it was well that he did not. I do not mean to say, that leeches and the antiphlogistic treatment are never indicated in the delirium which occurs at an advanced period of maculated fever, or in that which follows the stage in which the pulse falls to the natural standard, the thirst ceases, and the skin grows cool. Such an assertion would lead, in some instances, to an injudicious and even dangerous method of treatment, for cases do occur, where, under these circumstances, topical antiphlogistic measures are absolutely called for. My object in making these remarks, is to point out, not the rule, but the exceptions, the numerous exceptions to the method of treatment usually employed. In the delirium I am now describing, the feet and legs must be constantly stuped, the head must be diligently spunged with warm water and vinegar, the bowels relieved by injections, while opium is exhibited by the mouth

or in *lavements*; where there is warmth of the scalp, and the temporal arteries full, leeches are required, but where the scalp is not hotter than natural, they would prove hurtful; in a state of collapse, wine may be necessary; *blisters to the nape or head seem to increase the delirium.* When leeches are indicated, their good effects are much enhanced by combining tartar emetic with the opium, provided no diarrhœa or other symptom of abdominal irritation can be detected.

Case III. The next case is even more remarkable than the preceding, for the delirium come on quite suddenly, and without any premonitory symptom, and did not commence for several days after the fever had entirely ceased, which it did about the seventeenth day; neither was the termination, in this instance, rendered suspicious by any previous want of sleep.

Mr. ——— was attended by my friend Doctor Brereton, who found him labouring under the usual symptoms of fever, which commenced about the 27th of January, 1835. He was a young man of excellent constitution, and temperate, active habits; soon after the commencement of the disease, some bronchitic symptoms appeared, and at the usual time the maculated eruption was observed. Nothing remarkable occurred, until towards the fourteenth day, when a notable and steady improvement commenced, and on the seventeenth day he seemed to be quite free from fever; in fact decided convalescence appeared to have commenced, and consequently I left off my attendance, having been called in about the seventh day of the disease. As the patient's constitution was sound, his friends were not likely to permit any error of diet, and I did not anticipate a relapse, especially as there had been no serious affection of the brain, chest, or bowels during the course of the fever. I left him cool, cheerful, and self-possessed, his pulse regular, about sixty in the minute, and head entirely free from pain or flushing; his tongue had become clean; thirst gone, and appetite returning. All these particulars were of the most encouraging description,

and were not counterbalanced by any symptom indicative of the fast approaching danger. On the following day, the eighteenth from the beginning of his fever, I was again sent for in haste, and found that the patient had become suddenly and outrageously delirious during the night, an occurrence which seemed the more surprising, as no other symptom existed denoting a return of fever. This gentleman's life was saved with with great difficulty, for the delirium continued several days, and was at last only appeased by considerable doses of tartar emetic, combined with musk and opium.

NERVOUS OR SPASMODIC ASTHMA.

Formerly physicians recognized spasmodic asthma as a separate disease, frequently occurring and requiring a distinct mode of treatment; but when spasm went out of fashion, and morbid anatomy became an object of enthusiastic pursuit, the existence of this form of the disease was denied. Corvisart had shewn, that supposed asthmatic symptoms often depended on diseases of the heart, and others having demonstrated that asthma was occasionally produced by inflammation or dilatation of the bronchi, emphysema of the lung, &c. &c. the disbelief in the existence of pure spasmodic asthma became very general. Of late years, however, a more accurate acquaintance with the structure of the bronchial tubes, and a more attentive examination of the physical phenomena which actually occur during the asthmatic paroxysm, have led pathologists back to the old opinion, and accordingly we find nervous or spasmodic asthma admitted in the catalogue of diseases by Laennec, by Forbes,* and by Copland.† It was not without surprise, therefore, that I found the doctrine of the non-existence of such a disease as nervous or spasmodic asthma advocated by a physician of considerable celebrity, Doctor Clutterbuck,‡ who in his very valua-

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* Cyclopedia of Practical Medicine. † Dictionary of Practical Medicine.

‡ Medical Gazette, July, 1840.

ble clinical lectures, makes the following remarks: "Before going into particulars on this branch of our subject, it will be desirable to inquire how far the term spasm is really applicable to affections of the respiratory organs; or in other words, to what extent the respiratory muscles are concerned in certain cases of dyspnœa; for it is to muscular structures only that spasm can be referred.

"The only muscles found in the course of the air-tube, are those of the larynx; but these, as before observed, have no share in producing genuine asthma. It has been conjectured, indeed, by some, I should not say proved, that the back part of the trachea that is placed between the extremities of the cartilaginous rings, and which has been generally considered as ligamentous merely, is in reality of a fibrous or muscular structure, and consequently, that spasmodic contraction of these fibres may be a cause of periodical asthma. To this it may be replied, that not only has a muscular structure, as here supposed, not been satisfactorily shewn to exist, but contraction of the tube is particularly guarded against by the cartilaginous rings themselves; a structure that is gradually changed into ligamentous, as the tube divides and subdivides. Where, therefore, muscular contractility could serve no useful purpose, as far as we can judge, but where, on the contrary, it could only be exerted to the detriment of the function concerned, it seems unreasonable to infer the existence of spasm at this part, in order to account for the asthmatic paroxysm.

"But while I contend for catarrh being the true origin of asthma, I am not disposed to deny altogether the participation, to a certain extent, of the muscles of respiration, or rather I should say of the diaphragm, in producing the phenomena of the disease; whether the intercostal muscles have any share in the matter, we seem to be wholly ignorant."

When I formerly perused this passage, I was tempted to publish some remarks on the numerous anatomical errors it contains, but I was prevented from adopting this course by the

consciousness, that errors so obvious, would find few supporters, and I preferred leaving to others the task of their exposure, if exposure were deemed necessary. Now, however, that I am engaged in the consideration of some circumstances connected with the treatment of spasmodic asthma, it becomes a duty upon my part to notice Doctor Clutterbuck's opinion, as it is decidedly hostile to the supposition, that such a disease even exists. First, as to his assertion "*contraction of the tube* (i. e. *trachea*) is particularly guarded against by the cartilaginous rings themselves." In making this assertion, it is quite obvious Clutterbuck forgot the consequence which follows from the tracheal rings being incomplete, and circumscribing scarcely more than two-thirds of the diameter of the tube; an arrangement evidently made for the sake of permitting the diameter of the trachea to be diminished or increased. Secondly, as to Doctor Clutterbuck's assertion, "that the only muscles found in the course of the air-tube, are those of the larynx," and again, "not only has a muscular structure, as here supposed, not been satisfactorily shewn to exist," (viz. in the back part of the trachea between the cartilaginous rings;) all that is necessary to say is, that there never was, or could be, any doubt respecting the existence of a muscular membrane which is about half a line in thickness when contracted, and is as obviously muscular as any other portion of the muscular system whatsoever.

Doctor Forbes and Doctor Copland have truly observed, that in accounting for the existence of spasm in asthma, we are not restricted (as Doctor Clutterbuck seems to imagine) to the part the muscular apparatus of the trachea performs, for there is no doubt that the whole system of the bronchial tubes enjoys the function of vital contraction, as is proved by the anatomical investigations of *Reiseissen*,* and confirmed by the physical phenomena observed in the respiration during fits of asthma, hooping cough,

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* Vide Stokes *on Diseases of the Chest*, p. 150; and Forbes and Copland *ub supra*.

&c. &c.; of the bronchial muscles, Meckel says,* "In the interior of the lung, these muscular fibres increase in proportion as the cartilaginous rings diminish in size and number, and may be distinguished round the whole circumference of the smaller bronchial tubes, even where no further traces of the cartilages can be detected."

Thus then, it is evident, that to account for the spasmodic symptoms of asthma, we need not have recourse, with Doctor Clutterbuck, to the diaphragm or intercostal muscles, but to the muscles of the trachea and bronchial tubes themselves; on the whole, therefore, we may conclude, that those who have returned to the opinions professed by our predecessors, are not so much mistaken as their opponents pretend. Even when the paroxysm is intense in degree and duration, where the patient is obliged to sit up half the night; where any attempt to lie down produces symptoms of asphyxia; where hours are spent in extreme distress with lividity of face and lips, gasping, loud wheezing, and great fulness of the vessels of the head and neck; even under all these circumstances, the attack may be nothing but a fit of pure spasmodic asthma. A person thus affected may spend a whole night in the way I have described, and yet, towards morning, he may sleep a few hours, and awake refreshed and comparatively free from dyspnœa, and in the course of the day may be able to go up stairs quickly, run, ride, even hunt without difficulty.

I have in my recollection, the cases of several young men subject to severe paroxysms of asthma for five or six nights in succession, and who immediately after the paroxysm disappeared, could use any active exercise as well as the most vigorous and healthy of their companions.

These facts establish the existence of a disease deserving the name of spasmodic asthma, and shew that very violent pa-

* French Translation, Tome iii. p. 516.

roxysms of difficult breathing may occur in persons free from organic affection of the heart or lung. When, however, any permanent change in the structure of the respiratory or circulating apparatus exists, then such changes become the exciting causes of paroxysms of dyspnœa, often closely resembling true spasmodic asthma, but readily distinguishable from it, if due attention be paid to the history of the patient's sufferings and his state between the fits.

I have now met with so many cases of young persons in whom no trace of any organic complication existed, that it seems to me more than probable, that spasmodic asthma is not so rare a disease as is imagined. In a little boy, some particulars of whose case I formerly published, the attacks were frequent, violent, and to all appearance, purely spasmodic; he got a very severe paroxysm of gout (hereditary from both his father and mother) in his foot, and has never since had asthma, though four years have now elapsed, and he has been subject to all the excitement and violent exercises of a public school.

Mr. Fleming, now of the Isle of Man, and Sir Philip Crampton, attended with me a young gentleman, aged about twelve, who was subject to violent dyspnœa, increased by even the most gentle exercise; indeed for many months he could not walk even quietly in his room, without incurring the risk of suffocation from want of breath, attended with palpitation, wheezing, and all the symptoms of approaching asphyxia; every remedy we could devise was tried most perseveringly for a year, without the slightest benefit, when he got typhous fever, from which he narrowly escaped, but since his recovery, he has never had even the least vestige of his former complaint.

These two cases exemplify, in a remarkable manner, the influence which the general state of the constitution often exerts on local affections.

Asthma, like all other nervous diseases, is subject to the most unaccountable variations, and is most uncertain as to the effects which our remedies, or the influence of physical agen-

cies, produce. The following is an example. In December, 1839, I attended two gentlemen residing in the same street, and each about forty-five years old; neither was liable to any other disease, and they were both short and stout; on a very cold morning I found one of them very ill indeed; he had not slept at all during the night, and had every moment been on the point of smothering from asthmatic dyspnœa. The extreme violence of the paroxysm he attributed to the fact, that his bed-room chimney had smoked occasionally during the night, and the weather was so cold, that he was afraid to open the window to let out the smoke. I ordered him to change his room, and I then proceeded to visit his neighbour, and found him sitting in a room full of smoke; he apologized to me for introducing me into so disagreeable an atmosphere, and explained, that when the fit of asthma became very bad, the only sure means of obtaining relief, which he knew of, was to get a good coal fire lighted in the grate, which being done, he made his servant occasionally obstruct the progress of the smoke up the chimney, and thus maintain a certain density of smoke in the room; this never failed, he assured, to bring relief. This gentleman was of very active habits, was agent to several large properties, and consequently obliged to travel much about the country; experience had proved to him, that he could derive no benefit from turf smoke, and therefore he never stopped at any inn where they had no other fuel but turf, as he felt himself insecure unless he could procure coal smoke in case of an asthmatic attack. Such *idiosyncracies* will ever baffle the researches of the mere morbid anatomists, but afford a useful lesson to the practical physician.*

The phenomena of this disease are calculated to throw much light on the nature of what has been termed wheezing. A person subject to asthma, who has been breathing tranquilly the whole evening, may be attacked towards midnight with diffi-

* My friend Mr. Jeffreys, the well known inventor of the Respirator, tells me that he has met with a similar case.

culty of respiration, and a wheezing so loud, as to be heard on the stairs; this will continue for several hours, and then terminate, in some with a copious discharge of sputa, *in others without any expectoration whatever.* When we apply the stethoscope to the chest of a person so affected, we hear a great number of bronchitic rales, shewing that the larger and smaller tubes are both engaged; this is a matter of frequent occurrence in cases of dry asthma, where there is no expectoration, and where the fit terminates in a few hours, without leaving behind the slightest trace of pulmonary derangement. Hence we are led to the conclusion, that sounds of various characters and remarkable intensity may be produced without any inflammation whatever, and in fact without any remarkable alteration in the secreting functions of the bronchial mucous membrane, and that these sounds may wholly disappear where there has been no expectoration, and consequently where the bronchial tubes have not been cleared out. This is a fact worthy of being held in memory. Stethoscopists, when they hear bronchial rales, are apt to attribute them to the existence of bronchial inflammation, but here, with distinct proofs of the absence of inflammation, you may have a *maximum* of bronchial rales, and in the space of a few hours, you may not have a single sound at the very points where so many were audible before. It is obvious, therefore, that some of the received doctrines on the subject of bronchial rales, are still open to discussion. The practical inference, however, to be drawn from this fact is, that we should study such rales with great attention, and in connexion with other signs and symptoms, lest we be induced to treat antiphlogistically a case in which depletion might be uncalled for or injurious, an error by no means unfrequent among those who rely too exclusively on physical signs.

As to the treatment of spasmodic asthma, I have nothing to add to what is generally known, except that it is often serviceable to stupe the whole chest during the fit with flannel wrung out of water, as hot as can be borne, and that in some, much advantage is derived from small but very frequently repeated doses

of ipecacuanha wine, mixed with an equal portion of good tincture of castor.

LOOSENESS OF THE TEETH.

Among the various causes which produce looseness of one or several teeth, none is more common than inflammation of the alveolar processes and sockets. Sometimes this originates in disease of the tooth itself, or of the gums; but in other instances, the diseased process commences in the alveolar periosteum, and by spreading to the socket and gums, it gives rise to great pain, swelling, and sponginess of the latter, while it eventually detaches the fangs of the teeth implicated in the attack, from the grasp of the sockets, and thus at last the teeth fall out, though in themselves they exhibit no appearance of decay.

The progress of the disease, is accompanied by extreme pain, and as a puriform discharge oozes out from between the gums and the inflamed periosteum, many limit their attempts to local means, and often succeed in effecting a cure by frequent applications of leeches to the inflamed gum, and in very obstinate cases, by incisions freely made through the gums and inflamed periosteum. Last year a patient of mine was thus affected, and thus treated, and although under the care of a most skilful surgeon, and of an eminent dentist, he lost successively a left bicuspis and molar of the upper jaw. His sufferings were for a short time relieved by the extraction of each tooth, but in a few days became as agonizing as ever, when finding all the neighbouring teeth loose, and being told that they also must soon be drawn, he had recourse, in despair, to a celebrated homoiopathic doctor, whose infinitessimal doses completely failed, for the patient's sufferings were produced by a direct physical cause, which lay far beyond the limits to which the influence of even the most powerful imagination can possibly extend. Happening to mention his wretched state to me, I immediately recollected, that a year before I had successfully treated him for a periostitic

affection of the sternum and ribs, and that hydriodate of potash was the medicine which served him most. I recommended him to use ten grains of it three times a day, and had the satisfaction of perceiving a daily improvement, so that pain and inflammation soon ceased, and in about ten days the teeth were all fastened.

The periostitis to which this gentleman was liable, was of a rheumatic nature, otherwise his constitution was sound, and he was only thirty-four years old.

MEASLES OCCURRING TWICE IN THE SAME PERSON.

The following appears to be a very well marked instance of a second attack of measles; Miss ———, aged 12, on the 11th December, 1839, complained of headach and cough, which grew worse towards evening; on the second day of her complaint, a little feverishness was superadded to these symptoms; on the fourth day, intolerance of light came on, and in the evening an eruption of measles was observed. I saw her on the fifth day, and from that period, the disease assumed the character of severe rubeola, with a copious eruption, and considerable fever. Under the usual treatment, the case progressed favourably, so that on the ninth day, almost every appearance of eruption had vanished, and convalescence had fairly commenced, for the patient was free from fever, had some appetite, and was able to sit up in the evening. She continued to improve daily, but several others in the family getting the disease, my attendance was continued. On Fridy evening, 27th December, being the seventeenth day, and at a time that her health seemed quite re-established, she again complained of nausea, which prevented her from sleeping during the night, and for which I could not account, as she had remained confined to her bed-room, had used the most appropriate diet, and her bowels had been maintained in a gently open state, by means of senna tea, manna, &c. Next day (eighteenth from first illness) was heavy, stupid, feverish, and sick in the stomach; nineteenth, got up, but on account of increased nausea, was obliged to go to bed again; twentieth,

slept very badly; moaning, and talking to herself constantly during the preceding night; eyes very sore; great thirst; pulse full and quick. Twenty-first day of illness—I was much surprised at observing that a well marked and copious eruption of measles had appeared on the face, trunk, and extremities, attended with the usual febrile and catarrhal symptoms. This second attack of measles ran a regular course, and terminated favourably.

TINEA CAPITIS.

I have a few practical observations to make upon the dry, scaly variety of this disease, which has been so well described by *Plumbe* in his Practical Treatise on Diseases of the Skin; 4th edition, pp. 139, 140.

This species of ring-worm or dry tetter, is very contagious, and sometimes makes its appearance in one or several spots on the scalp, face, or other parts of the skin, but seldom is observed on the lower extremities or abdomen. It scarcely ever remains for any great length of time fixed in any part, except the hairy scalp, where it is apt to locate itself and become permanent; its duration often extending through a great number of years, or even a whole life-time. I recommend attention to the following points:—

1st. When the disease is of long standing, always insert an issue in the arm before you attempt its cure. I have seen water on the brain, and other fatal consequences, from the neglect of this precaution.

2ndly. If this disease has clearly originated from contagion, and no other evidence of derangement of the general health can be detected, we must not, from the mere presence of the cutaneous affection, infer a constitutional taint, and must avoid the common error, of making the poor children undergo a course of alterative medicines.

3dly. This affection originating in contagious matter directly applied to the skin, cannot, like some varieties of lepra and

psoriasis, (to which it often bears a great resemblance,) be cured by internal medicines, such as mercury, arsenic, and iodine, given separately or in combination, as in Mr. Donovan's new preparation.

4thly. When it occupies the hairy scalp, the common procedure of shaving the head is injudicious, for it adds to the irritation of the skin; and the scalp can be sufficiently exposed by cutting the hair as close as possible with a sharp scissors.

5thly. The great object is to get rid of the morbid action which is going on, and which consists in an inflammation of the external surface of the corium; an inflammation occurring in spots, and giving rise in the first place to an increased secretion of epidermis, which produces the scaly appearance of the parts affected; and in the second place, to a very slight and scarcely perceptible oozing of moisture which immediately dries into scales, and thus escapes notice, being mingled with the scurf formed by the detached portions of morbid epidermis.

6thly. The cure must be accomplished by removing these scales, as far as that can be done by diligent ablution, without using any irritating degree of friction; and when the diseased portion of the skin has been thus exposed, we must next have recourse to some application which will destroy the morbid secreting surface. Formerly this was attempted by means of an endless variety of complicated formulæ, each of which had its advocates; the list may, however, be now reduced to a few simple remedies, and in truth, with nitrate of silver, sulphate of copper, or strong tincture of iodine, every case of this disease may be cured.

7thly. I never use the solid lunar caustic, or sulphate, but prefer a solution of ten, fifteen, or twenty grains to the ounce, as the case may require. As to the application of this solution, it will not do to apply it, as is generally done, with a camel's hair pencil, *for it must be strongly rubbed into each spot*, for which purpose a small bit of sponge, covered with fine linen, and tied to the end of a quill or slender stick, should be em-

ployed. When a large portion of the scalp is affected, it will require some perseverance to apply this lotion in an effectual manner.

8thly. An application of this nature, when effectually done, must not be repeated oftener than once a week.

9thly. Immediately after it the whole scalp must be covered with a spermaceti dressing, and the spermaceti must be renewed at least four times daily, so as to keep the head constantly moistened with it. The head is not to be washed for three days after the application of the caustic, or of the tincture of iodine, but then it may be well but very gently washed with yellow soap and water twice a day, taking care to cover, as before, with a spermaceti dressing after each washing.

In scaly diseases of the skin, it is quite surprising how much the cure is facilitated by keeping the affected parts constantly smeared with spermaceti, oil, melted suet, or even candle grease. Without this aid, the use of caustics will often disappoint the practitioner.

10thly. When the above precautions have been taken, the cure will advance rapidly, and each succeeding application of the caustic solution, or of the tincture, may be less severe.

I have already mentioned that danger may arise when cutaneous action long continued is suddenly checked; I saw lately a very melancholy example of this. A gentleman, aged about twenty-two years, contracted a rather severe cold in his chest, which rendered confinement to his room necessary for a few days; he was impatient, and applied a very strong blister to his chest, which effectually cured the pectoral symptoms, but left a sore raw surface; this he neglected to dress properly, and soon betook himself to his favourite horse-exercise, in which he indulged freely, without any other bad effects than further irritation of the blistered part, which, in the course of a few weeks, became converted into an actively discharging surface. After some time, additional neglect and improper irritating applications so increased the inflammation, that at one time it assumed

a very threatening aspect, when at last he sent for Mr. Cusack, who, in consultation with his ordinary medical attendant, laid down a plan of treatment, which was followed up with perseverance, and ultimately, after the lapse of several weeks, completed the healing of this extensive and ill-conditioned sore. On the very day after the attainment of this apparently desirable object, this gentleman, who had hitherto felt his general health quite good, was seized with a difficulty of breathing and faintness, both of which increased from hour to hour, and in about twelve hours from the beginning of the attack I saw him moribund with cold clammy skin, Hippocratic countenance, and an irregular fluttering pulse. The chest every where sounded well, and there was an absence of all physical signs of pneumonia or bronchitis, while an examination of the præcordial region left no doubt of the existence of effusion in the sac of the pericardium. He died in less than twenty-four hours from the occurrence of the first symptom.

TREATMENT OF SCIATICA AND LUMBAGO.

Having formerly published in my clinical lectures, some observations on the treatment of lumbago and sciatica, I think it right now to add what subsequent experience has taught me concerning some points connected with the same subject. In acute and subacute lumbago and sciatica, the most approved treatment consists of antiphlogistic measures, particularly blood-letting, general and local, followed by the exhibition of antimonials and Dover's powder in proper doses. Cupping the lumbar region (when the operation is skilfully performed) deservedly enjoys a high reputation in lumbago; and if sciatica is present, the tender parts about the buttock and thigh must likewise be repeatedly cupped; in the latter case, it is requisite to have a very small scarificator, and cups of a corresponding size, so as to enable the operator to follow the track of the sciatic nerve. In Germany they generally use instruments so small, that ten or twelve of the glasses may be placed close to each

other, in a line extending along the painful portion of the nerve where it lies most superficially in the thigh. This practice deserves more general imitation in this country.

That popular remedy, a warm bath, often forms a most excellent adjuvant to these measures, and is still more efficacious when preceded by a powerful warm douche. A stream of hot water, played with considerable force against the loins, buttock, and thigh, seems to act, not merely by the heat it imparts, but also by the mechanical impulse it exerts, an impulse which may be termed *water-champooing;* in Dublin, such a douche and warm bath may be had at the Northumberland Buildings. The means just enumerated, combined with absolute rest in bed, will succeed in many cases; in others they will fail, and then this question arises, what ought we to try next? I have never ventured on the treatment of rheumatic diseases by very large doses of opium alone, as first recommended in America, and afterwards sanctioned by Dr. Corrigan, whose results were, however, quite independent of the American observations, of which he had not even heard, when he published in this Journal on the treatment of rheumatism. But though I have not used such large doses of opium, yet I have followed the example of Dr. Perceval and Dr. Cheyne, of giving two or three grains of opium in the day, combined with calomel and James's powder.

In a case of lumbago and sciatica, which I treated with my friend Mr. White, of Dawson-street, the disease, at first neglected, had passed from a chronic to an acute state, and had become painful to the greatest possible degree; in truth, the patient's agony was quite excruciating, and though a man of strong mind and vigorous nerves, the sweat poured down his face from the suffering he endured whenever it was necessary to move himself in the bed, or even when the floor of the room was shaken by any person treading heavily.

As our patient had been repeatedly cupped, and the usual remedies had completely failed, Mr. White proposed a combi-

nation of three grains of acetate of morphia, six grains of calomel, and twelve of James's powder, divided into eight portions, one to be taken every third hour; the good effects of this combination were so striking, that I have since had recourse to it repeatedly, and there is no one remedy in which I have greater confidence; still, however, it is liable to the objection, that it must generally be continued until the gums become tender, or even the mouth slightly sore, an objection not, it is true, of much weight, in cases like the preceding, where the disease is very acute, and the patient necessarily confined to his bed; but which renders this combination quite inapplicable in sub-acute or chronic attacks, where the sufferer tries to pursue his ordinary avocations, and is necessarily exposed, more or less, to the open air; to such persons, *hydriodate of potash* will prove most valuable.

I first became acquainted with the remarkable efficacy of this medicine in lumbago and sciatica, under the following circumstances. In the memorably wet month of July, 1839, I was called out of bed at midnight, to visit a lady in the country, and the vehicle sent to convey me was a hack covered car. The cushions were very damp, and I had not proceeded half a mile, before I was attacked with lumbago, so severe, that I could scarcely walk when I arrived at my patient's residence. Next morning I was better, having perspired much during the night; but still the pain was troublesome, and as the season continued unusually cold and wet, (indeed it scarcely ever stopped raining from the 8th of July, 1839, to the 19th of February, 1840,) and as my duties exposed me much to the weather, and prevented me from giving myself the necessary rest, my lumbago continued to increase again, and in about a month, the gluteal and sciatic nerves of the left side became engaged; I noted particularly, that the pain spread very gradually downwards from the lumbar region, so that it took a week or ten days to arrive at the ham, and a still longer time at the ankle; I was then quite lame of the left leg, suffered much from pain in bed, and had become so

helpless, that I had to get my servant to draw on my stockings; during all this time my general health was perfect; appetite good; digestion regular; and no deviation of the urine from the natural appearance. I mention this, because several of my medical friends advised me to take antibilious aperients, an advice founded on Abernethy's doctrine, that many local affections proceed from stomach derangement. I was at last forced to try something for my relief, and had myself cupped, and tried the warm douche and Dover's powder, but without any good effects. I began now to fear, that I should be forced to give up all professional business, and confine myself to the house for many weeks in order to go through a mercurial course, combined with proper topical applications, when happening to meet Mr. Ferguson of Kildare-street, he recommended me to try hydriodate of potash, of which he was good enough to send me a drachm dissolved in a pint of decoction of sarsaparilla. I took quarter of this daily, and may literally apply here the common phrase, that I felt each dose do me good; in truth the benefit I derived was perceptible hourly, and was so rapid, that in four days all traces of the lumbago were gone, and my lameness had quite ceased. I did not take more than one bottle, i. e. one drachm of the hydriodate, but the good effect continued after I had ceased taking it, and in less than a week, I was perfectly well. Subsequent experience enables me to recommend this medicine strongly, in subacute and chronic lumbago and sciatica.

It is right to observe, that the remedy had in my own person to work against various disadvantages, for I neither relaxed from my labours, nor refrained from eating and drinking as usual. This is only another example of the many I have met, which prove how injudicious it often is, to seek the cure of local inflammations by means of lowering the whole system.

In spite of the best directed means, sciatica is very apt to become chronic, and then spirit of turpentine, carbonate of iron, arsenic, extract of stramonium, corrosive sublimate, blue pill and iodine internally, blisters to the loins, thigh, and calf of the

leg, acupuncture, croton oil frictions, and other stimulating applications must be successively tried. On a former occasion I recommended a combination of opium, with spirit of turpentine internally, and when that fails, Dover's powder, combined with sulphate of quinine. I am sorry not to have it in my power to lay down any general principle, which would enable us to judge in what cases each of these remedies is peculiarly indicated, for experience has not confirmed any of the rules generally relied on, and, therefore, we must content ourselves with treating these diseases empirically. Change of climate and the use of the Bath, Buxton, Harrowgate, and Tunbridge spa waters, have proved serviceable to many, while others have been obliged to have recourse to the natural hot baths of Bagnères or Barèges. In very obstinate cases, the practice long adopted in the surgical wards of the Meath Hospital, is to apply the actual cautery to five or six spots along the course of the painful nerve. The application ought to be rather severe, so as to produce moderately sized sores, which must be kept open for a fortnight or three weeks, by suitable dressings. This is a very painful process, and for several days after the application of the cautery, the patient suffers much, and often thinks the disease to be aggravated; after some time, however, improvement becomes perceptible; and on the whole, I do not think any other remedy is so much to be relied on in very obstinate cases of sciatica. An observation made by my intelligent friend, Dr. Grogan, is worth recording, as it bears on a physiological question.

In a patient of his, a young man of robust constitution, who suffered for more than a year much pain from an imperfectly cured sciatica, the affected thigh and calf were much subject to spasmodic pains, and muscular twitchings. These sometimes continued night and day, and in consequence of these morbid contractions constantly recurring, the muscular fibres became hypertrophied, and the whole limb became much more developed, presenting a more athletic outline, and exceeding its fel-

low considerably in bulk. This fact, which was pointed out to me by Dr. Grogan, is very remarkable; for, in general, chronic sciatica induces a flaccid and atrophied state of buttock, thigh, and calf. In the case referred to, the hypertrophy disappeared in less than a month after the actual cautery had been applied. As the practical physician ought not to neglect any circumstance, however trivial it may appear, which bears upon the health of his patients, the following hints should not be regarded as too trifling for notice. Persons subject to lumbago ought, as much as possible, avoid remaining for any length of time in a flexed or stooping position, particularly if exposed to cold; it is for this reason that lumbago so frequently attacks gentlemen, while engaged in the act of shaving. Those who are liable to the disease, therefore, must be careful either to shave while sitting before the glass, or if standing, let the glass be placed so high that they may stand quite straight. Again, many are attacked while drawing on their boots; this accident may be surely avoided by using boot-hooks, with shanks about fourteen inches long, so that the body and thigh may be nearly in the same line, when the effort to draw on the boot is made. Persons who are in dread of lumbago and sciatica, ought always to wear stout drawers, whose waistband should be broad, and consist of a strong, warm, yet elastic material, so as to allow it to be worn very tight without inconvenience.

SINGULAR AND PAINFUL AFFECTION OF THE FEET.

In a lecture on Inflammation, formerly published, I brought forward proofs, that the views commonly entertained of the forces which carry on the circulation in the human body are incorrect, and endeavoured to show, that besides the contractile force of the heart and larger arteries, the human system possesses a power by which alone the circulation is carried on in plants and in the inferior animals, that is, the power residing in the capillaries and smaller arteries. I endeavoured also to prove, that

the capillaries exercise a remarkable influence in the process of inflammation, and that the part they play is independent of any force derived from the heart's action. Now that the smaller vessels of a part possess an extraordinary power in modifying its circulation, independently of any *vis a tergo*, is rendered quite plain by the phenomena observed in all erectile tissues, in the clitoris and penis, mammæ, &c. &c.

Professor Müller and Dr. Houston have endeavoured to show, that there are provisions in the veins and arteries, calculated to favour the rapid afflux of blood to these tissues; but their explanations are quite insufficient to account for the phenomenon, which remains a striking instance of the power possessed by the nerves and arteries of a part in producing a great and instantaneous change in its circulation, independent of any impulse derived from the heart; and the fact can be only explained by supposing, that the vital influence of each part has the principal share in modifying its own capillary circulation. The cases I am now about briefly to relate, all bear upon this question.

The patient is a young lady who had the catamenia suppressed at the age of sixteen, and who had been for some time in a bad state of health. After an accidental diarrhœa, which weakened her greatly, she became subject to a very curious affection of the feet and legs. The attack generally commenced at night, involving the foot, ankle, and leg, half way to the knee. It is generally confined to one foot and leg at a time, and when it subsides in one extremity begins in the other. The affection commences with heat and tingling of the sole of the foot, then of the instep, ankle, and leg, as high as the middle of the calf. These symptoms go on increasing for some time, the sensation of heat becomes extreme, and the pain agonizing. In proportion to the increase of these symptoms, the vascular congestion and fulness of the limb are augmented, the smallest veins are rendered distinct, and the larger ones become prominent. This state lasts

for eight or nine hours, the sensation of heat and pain being all the time nearly insupportable.

The resulting congestion of the cutaneous capillaries occasions a change in the skin, which, as the fit proceeds, grows at first red, and then gradually assumes a more suffused appearance, and a deeper hue, until it becomes swollen, smooth, and shining, and resembles very much in colour a black cherry when nearly ripe. When the hot fit ceases, the slight swelling and this discoloration subside, and the affected parts remain during the next stage pale, deadly cold, and comparatively free from pain. While one leg is in the hot stage, the opposite leg is cold and pale, but free from pain; but as soon as the pain and heat have disappeared in the limb first affected, the same series of phenomena commences in the other leg, and lasts for the same length of time; after which both limbs are in their natural state, and for two or three hours she is comparatively free from suffering, although some uneasiness still remains, which she compares to a numbness, or some such morbid sensation not easily defined. This disease commenced three years ago, and its paroxysms have returned every day since. In 1837 the pain was intolerable, and the daily amount of ease she enjoyed did not exceed three hours; this occurred quite regularly, beginning about four o'clock, and lasting until seven in the morning, during which three hours she had some sleep. Now, (October, 1840,) the intermission occurs at eleven A. M., and continues until seven in the evening. In 1837 she could not sleep at all when either foot was in the hot fit, so great was the pain; now she enjoys tolerable rest at night, although one or other of the extremities is in the hot stage during the whole time she is in bed. She is much improved in appearance, and though of slender form and tall, she has become sufficiently fat, and being a person of most placid temper and great beauty, no one who sees her in the drawing room apparently in all the bloom of health, would sus-

pect her to be such a martyr; even now she is obliged to sit or recline on the sofa during the entire day, for if she walks much about the room, the hot fit in her limbs is immediately brought on. The suppression of the catamenia made us at first consider this strange affection as a variety of hysteria, but in about six months the female function resumed a perfect regularity, without bringing the slightest alleviation of the symptoms.

Neither could we attribute the continuance of the disease to any particular constitutional defect, for though her form was slender, her aspect was healthy, and her general state of health was better than could have been expected, considering her nearly unceasing pain, and almost total want of sleep. In order to convey a more accurate idea of this singular malady, I give the following extracts from letters written to me by her mother, a lady of great intelligence, who, at the risk of sacrificing her own health, has attended her suffering child, night and day for the last three years, with that assiduity which none but a mother can exhibit.

"January 10th, 1837.

"My dear Sir,

"I do not think she has recovered the effects of an obstinate toothach on her general health. Her appetite is completely gone, and her looks indicate extreme delicacy; besides her poor feet were particularly hot and inflamed; and continue now severely affected by the intense coldness of the weather. Frost and snow, and fearful storm, have prevailed here of late, and we have not had our sufferer out for some weeks, which is greatly against her.

"I cannot say there is any change in the appearance of the limbs, nor in the description of pain, save that they smart very much during this frosty weather, and we cannot assist to cool them as much as we would, lest the cold water should cause any breaking of the skin."

In explanation of the above, I have to observe, that during the hot state, the only thing which afforded the least relief was cold water; cloths, dipped in the coldest water that could be procured, were applied to the feet and legs constantly during the night; sometimes the extreme severity of the pain was diminished by patting, or gently touching with the hand the affected parts, and her attendants used to spend hours together in affording her the alleviation so obtained."

"23rd March, 1838.

"My dear Sir,

"So far from being in the least relieved, the limbs are now unceasingly in a state of swelling, particularly distressing; and whether cold or hot, alike; and both stages of this most extraordinary complaint are now attended with acute pain and extreme *discoloration*, far beyond what they were when in Dublin.

"Her nights are worse, and extreme exhaustion and lassitude are visible during the day, and depression of spirits hourly increases. Assurances of ultimate recovery or future ease are alike unheeded by her, and I am myself greatly distressed.

"Indeed I look on her present state as much more alarming than heretofore; it is quite evident the constitutional effort has not in the least relieved her feet; and the extreme swelling is, in my mind, very alarming.

"Her appetite is daily declining; I am seriously unhappy about her.

"The skin shines, just as if in erysipelas; the soreness to the touch becomes greater than usual."

"April 26, 1838.

"My dear Sir,

"No improvement in her health seems in the least to affect her limbs.

"The determination of blood has quite returned to its former course; the rush is sudden, and rapidly extends to the toes now, instead of tarrying awhile at the instep and heel, as for a time it seemed to do.

"The heat is quite as great as when in Dublin, but the cold stage is more painful. The cold and numbness are now felt all the way up the legs; *before* it was only from the ankles over the foot; and should the patient recline on a bed or sofa during the cold stage, the sensation, on arising off either, is particularly distressing.

The veins each morning, on leaving bed, are distended just as you have seen them, and the livid hue overspreads the feet as then; and also, when cold, the only application we use is milk and water, and patting them frequently; but even that alleviation my daughter cannot have so constantly now as heretofore, for from the extreme tenderness of the parts, the slightest touch pains her.

"Swelling of the feet sometimes continues throughout the entire day, and generally the hot fit ismore protracted than formerly; never less than twelve or fourteen hours, and often more.

"My daughter now experiences a tendency to *palpitation* which she had not before, and this arises frequently without any particular cause, although the entrance of a person unexpectedly or suddenly into the room would excite it. And when the palpitation of the heart comes on, there is a *similar feeling* experienced in the limbs, especially from the *calves* of the legs down, as though *palpitation* was *there* also. Going up stairs does *not* bring on this palpitation, which one would suppose it might do.

"The bowels require assistance as formerly, but magnesia is quite sufficient, given once a week; however the two last times, we have perceived greater sickness attended, and extreme debility all through the day after. Flushings of the face are

very frequent, and sleepiness ensues after the mid-day glass of wine, though usually the wine is diluted with water. Generally speaking, her looks are decidedly improved, though she is not fatter than when in Dublin. She has now scarcely a hope of ever being relieved from this most distressing determination to the limbs; though in general she is enabled to bear up with surprising cheerfulness, and occupies herself in various useful ways.

"A short drive yesterday (the first fine day for a length of time) greatly fatigued her, but did not induce more sleep at night.

"When in conversation, we are led to reflect, that it was just after the severe attack of *diarrhœa, in September last,* that this extraordinary determination *commenced,* we think, perhaps, it was entirely consequent on it, and would again ask you, my dear Sir, could this have been the case, and how? This idea is completely fixed in the mind of your patient."

"May 7, 1838.

"My dear Sir,

"I grieve to be obliged to continue my detail of suffering; painful nights, without sleep, are succeeded by days now scarcely less painful, as the heat and swelling seldom abate.

"Discoloration and swelling are general all over the feet, ankles, and instep. At the back of the legs, just at the commencement of the calves, a lump appears to form, owing to the determination there, and the backs of the legs, from that up to the knee, are particularly hard to the touch, and this not in the veins alone, as formerly, but generally all over. The appearance of the feet (and toes especially) are shining as if in erysipelatous inflammation; at least I have witnessed similar appearances under such.

"Extreme weight in the limbs, both when hot and also when

cold. The coldness is quite as great as when in Dublin; the burning heat equally in an extreme. The pain sets in with the slightest approach to warmth, and the cold stage is no longer one of comparative ease, as last winter; for the sense of weight is as great as when heat prevails, and walking about the rooms induces swelling at once, even though it might have subsided beforehand.

"I think your patient by no means improving as to appetite or general strength *at present*, the slightest exertion evidently overcomes her; the kidneys act very scantily, and the discharge very muddy and of a reddish hue; the sediment of a white and reddish hue also. Bowels require assistance every fourth or fifth day; magnesia now excites extreme sickness, even faintishness attends each action of the bowels after it."

"May 25th, 1838.

"My dear Sir,

"I am sure you will be concerned to hear that I have not more cheering intelligence to detail, respecting your patient here, than when I last wrote to you.

"I think, on the whole, the determination to the feet has been greater than before; the swelling more general over the ankle and entire foot, and discoloration equal when cold as during the hot stage, attended with a shining appearance on the shin, which really alarms me to look at; pain great as ever; and the last few mornings violent pulsation or throbbings in the heel.

"On first arising out of bed in the morning, she feels as though the veins at the backs of the legs, toward the calves, were cutting asunder by some sharp instrument. Walking evidently increases the determination downwards, and excites the pain and swelling more than any other thing; yet, *walking* would be her *favourite* exercise, if she could use it to any comfortable extent. When taking a drive in the carriage, she gets a great pain in

her left side ; headaches are very frequent, and her complexion very variable during the last fortnight. Bowels have not acted at all, *unless assisted,* since I last wrote to you ; and after magnesia on Wednesday morning, extreme pain and sickness ensued, and a number of constipated lumps came away. Appetite is far from good; thirst increasing greatly; her wine in the middle of the day causes immediate flushing, and a disposition to perspire over the hands, face, and neck ; all evincing extreme debility. She often feels as though a stream of water, icy cold, was rushing down through her limbs, and when arising from her chair during the cold stage, feels as though she stood in snow."

The preceding details, extracted from some letters written by the patient's mother, will convey to the reader a more accurate idea of her sufferings, than could be imparted by any description of mine. It is remarkable, that the disease of her feet was not accompanied by the least derangement of her general circulation, or of the state of the rest of her skin.

This young lady was frequently seen by Sir Philip Crampton, Mr. Colles, and Mr. Cusack, and her case excited in their minds the greatest interest, for they had never witnessed any thing similar. At first chronic inflammation of the arteries in the limbs was suspected, but this suspicion was set aside by the subsequent duration and course of the malady. No plan of treatment, whether general or topical, which afforded the slightest prospect of relief was neglected ; every variety of lotion, cold and hot, stimulating or narcotic ; of ointments, bandages, poultices, affusion, were successively tried, and the parts were often leeched in the hot stage, but without any relief. Internally, quinine, arsenic, iodine, hydriodate of potash, chalybeates, purgatives, diuretics, and mercurialization, have all successively failed, nor has she ever received the slightest benefit from any anodyne medicine whatsoever. From the resemblance which the

derangement in the circulation of her limbs bears to that produced by ergot of rye, I was led to try that medicine, but it did not produce any notable effect on the disease. It is curious, that this long-continued derangement in the circulation of her lower extremities, and the extraordinary pain she has experienced daily for the last three years, have not produced any paralysis, any diminution of muscular power, thickening of the skin, induration of the subcutaneous cellular tissue, or stiffness of the joints. Considering how hot, red, and swollen, a considerable portion of each limb is during many hours every day, it is quite surprising that no evident alteration of structure was the result. This fact is extremely interesting in a physiological and pathological point of view, proving, as it undoubtedly does, that changes in texture are influenced by causes quite independent of the state of the local circulation.

In general, we observe that increased sensibility of the nerves of any part, when long continued and severe, is followed by a proportional paralysis of sensation; but in the case before us, the cutaneous nerves of the leg have been exquisitely painful for years, and yet not the least approach to paralysis, either of sense or motion, is perceptible.

I have been induced to publish the preceding case, chiefly with the hope of its meeting the eye of some medical man capable of suggesting a remedy likely to alleviate the great sufferings of this patient. Although I myself have not witnessed any thing precisely similar, yet, I have seen a few local affections which presented something analogous to the disease just described. These I shall now briefly describe.

The first I saw with Mr. Moore of Anne-street, who, at my suggestion, kept accurate notes of the progress of the patient, who was visited occasionally also by Sir Philip Crampton.

PAINFUL AFFECTION OF THE TOES.

Mrs. ———, æt. 82, of a robust and healthy constitution, florid complexion, in the month of February last had a slight paralytic affection of left arm and leg, preceded and accompanied by headach, vertigo, flashes of light before the eyes, &c. About a month ago she experienced a sensation of cold in the right foot, which, on rubbing the part, gave place to a feeling of heat and itching; on examination, she found that the anterior half of the foot was swollen and red. In about three weeks from first seizure, the sensation of cold continuing, it became extremely painful, and she then first applied for medical advice.

August 1st, 1839. Complains of severe pain in anterior part of right foot, which is swollen and red; there is considerable œdema of the ankle and lower part of the leg; the extremities of the toes are dark red, with some lividity. Her general health is good, with the exception of occasional headach with vertigo. Bowels free; appetite good; pulse regular. She was ordered a stimulating liniment, and internally small doses of hydriodate of potash.

5th. She experienced much relief from the use of the liniment; the œdema about the ankle is much less, but the swelling of the anterior part of the foot continues nearly as before.

13th. The great toe has to-day a peculiar shining and *blobby* appearance, the fourth is livid at the extremity, the second and third are red, but not livid. Four leeches were applied to the great toe, followed by a poultice of bread, milk, and oil, to the foot; it was impossible to get the leeches to take on the other toes in consequenc of the recent use of belladonna liniment.

15th. The toe to which the leeches were applied has been completely relieved, but the livid appearance of the fourth still continues; second and third appear much swollen, and are very painful; apply two leeches to each, and one to fourth.

August 17th. Considerable pain last night. We thought now that the pain, redness, and swelling exhibited exacerbations re-

curring every second day, and we accordingly gave her quinine in small doses, and again leeched the toes. As the quinine disagreed with her stomach, it was administered every night in a starch injection, with a few drops of laudanum, and continued for a week; while the toes most affected were repeatedly leeched, and various soothing and anodyne applications tried. The pain was of a most excruciating character, and its exacerbations, though not regularly periodical, showed a decided tendency to return every second morning at a given hour. Sometimes one toe, and sometimes two, or more, were simultaneously attacked, and in proportion to the intensity of the pain, the affected parts became swollen, red, and then of a shining purple hue. Such was the course of the disease from the 1st of August to the 15th of September.

On that evening Sir Philip Crampton saw her, and the following medicines were ordered:—

℞ Mist. Camphoræ ℥ i.
Vini Rad. Colchici gutt. xx.
M. Ft. Haustus ter die sumendus.

℞ Decoct. Papaveris albi Oi.
Ext. Cicutæ ℥ ss.
—— Opii. aquosi gr. x.
M. Ft. Solutio pro Cataplasmate.

September 16th. Pain completely relieved.

17th. The pain returned this morning at four o'clock, but not so violently.

Rep. Haustus.

30th. The foot has been since last report gradually assuming its natural appearance; there is now very little swelling or lividity. The pain has not latterly been so intense, and is of a different character, being described as resembling the sensation experienced when the circulation is returning in a limb which has been "asleep." The accessions are now generally in the evening, to which they have gradually come, occurring at three, two, one, twelve o'clock, and so on. Applications which for-

merly gave great relief are now followed by intense pain, and cannot be borne, as anodyne liniment; the application of fresh hemlock bruised was also intolerable. Emollient applications, as camomile stupes, bread and milk poultices, give most relief; general health is good; is at present using effervescing draughts with tincture of orange-peel.

October 7th. The foot has not been painful since last report, and its appearance now is nearly as possible natural.

Soon after this, she got a slight paralytic stroke, followed by more severe attacks of an apoplectic nature, and expired in consequence of cerebral disease, on the 25th of November.

It is obvious that the good effects of the colchicum may excite the suspicion, that the inflammation was of a gouty nature; still, however, the manner in which it so gradually began, the remarkable violence of the pain, and the change of colour in the skin which accompanied each paroxysm, were of so striking a character, and presented analogies with the case of the young lady before related, so obvious, that I have thought it right to place the histories of the two diseases side by side.

The absence of dyspepsia, and all constitutional or local symptoms of gout, up to the age of eighty-two; the freedom from gouty deposits, which the urine exhibited throughout the whole course of the old lady's malady; and various circumstances that have not escaped the notice of the reader, render the hypothesis which ascribed her suffering to gout more than doubtful, and the doubt is still further increased, by the very gradual manner in which the disease subsided under the use of colchicum, and its preserving its "tertain" character to the end.

The affection of the foot and toes was so painful, and the discoloration and purple hue of the skin so intense, that we naturally apprehended its terminating in something like *senile gangrene.*

GOUTY REDNESS OF THE NOSE.

A lady of a decidedly gouty habit, aged sixty, applied to me under the following circumstances: for the last two months,

she had become liable to a daily paroxysm, which observed the following course. About three o'clock in the afternoon, her nose began to grow hot, and the heat continued for four or five hours, the part becoming first of a bright, and then of a purplish red colour, which spread to the upper portion of her cheeks, and was accompanied by some uneasiness, but no pain, and always subsided about the same hour in the evening. I advised small doses of colchicum, but have not learned the result. Within the last ten years, I have seen, in private practice, three examples of hypertrophy of the finger tops, and corresponding hypertrophy of the nails, two occurring in delicate, and one in a phthisical habit. In all these patients, the remaining parts of the fingers were emaciated, while the tips of the fingers were much, and abruptly enlarged, especially in the transverse diameter, the nails being also of greater size, considerably longer, broader, stronger, and more curved than natural; in all these, was evident increase in the capillary circulation, and the tips of the fingers were red, tender, and painful, and often bathed in sweat; a minor degree of this affection, characterized however only by strong aduncated nails, while the tips of the fingers are much less emaciated than other parts of the hand, feel hotter to the patient, and sweat more, is frequent in phthisis.

ART. IX.—*On Purpura Hæmorrhagica, and a newly observed Species, Exanthema Hæmorrhagicum.* By ROBERT J. GRAVES, M. D.

Two cases presenting some points of deep interest and novelty have recently come under my notice; in both instances, the sufferers were young men of good constitution, who in the prime of life, free from any discoverable organic affection, and without any known predisposing cause, have fallen victims to profuse and intractable hæmorrhage.

These two cases will be found to present many points of

similarity ; indeed they agree in their most striking features with each other, while they do not correspond either with any of the varieties of purpura, as described by Willan, or with any form of hæmorrhage noticed by other authors. This identity of type, and the remarkable circumstance, that each was accompanied by a rash, not at all like *purpura*, but very closely resembling the rash of measles, has led me to look for a name expressive of the chief characters of the disease. The great obstinacy and fatal extent of the hæmorrhage, rendered obvious the appropriation of the term hæmorrhagicum to the species, while the occurrence of a rash appearing on the skin at a certain stage, pointed out the term exanthema ; accordingly I have fixed on the name *exanthema hæmorrhagicum.*

The eruption, as I have said, resembled that of measles, it had not, however, the crescentic outline of the rubeolous rash, and consisted of roundish spots, almost exactly similar in appearance to the red efflorescence which we so often see in maculated typhus. The constitutional symptoms, however, as we shall see, altogether differed from those of fever in general, and typhus in particular.

Being of opinion that the disease I am about to describe has not been accurately observed by preceding authors, and having ventured to give it a new name, I think it right to subjoin the account of purpura hæmorrhagica, as given in the *Cyclopædia of Practical Medicine*, in order to give my readers an opportunity of judging, whether I am justified in the claim made for the admission of an additional disease into our nosology.

" In *purpura hæmorrhagica* ' the petechiæ are often of a larger size, and are interspersed with livid stripes and patches, resembling marks left by the stroke of a whip, or by violent bruises. They commonly appear first on the legs, and at uncertain periods afterwards on the thighs, arms, and trunk of the body, the hands being more rarely spotted with them, and the trunk generally free. They are usually of a bright red colour when they first appear, but soon become purple or livid ; and,

when about to disappear, they change to a brown or yellowish hue; so that, as new eruptions arise, and the absorption of the old ones slowly proceeds, this variety of colour is commonly seen in the different points about the same time. (See Delin. plate xxviii. fig. 2.) The cuticle over them appears smooth and shining, but is not sensibly elevated; in a few cases, however, the cuticle has been seen raised into a sort of vesicles, containing black blood .... The gentlest pressure on the skin, even such as is employed in feeling the pulse, will often produce a purple blotch like that which is left after a severe bruise."* The nature and seat of the small effusions of blood which constitute the petechiæ, from which the vibices and ecchymoses differ chiefly in magnitude, are well explained by the anatomical researches of Rayer. 'On dissecting the skin,' he observes, 'it is found that the petechiæ and ecchymoses do not at all occupy the same situation. Some are very superficial, and seated on the surface of the rete mucosum; others occupy the alveoli of the cutis; the largest and darkest-coloured have their seat under the skin in the cellular tissue. In these the blood is found coagulated, but it is fluid in the smaller and more superficial effusions. The vascular ramifications contiguous to these minute ecchymoses are in their natural state. The blood is easily removed by washing or maceration.' "†

Having made these preliminary observations, necessary for the better understanding the peculiarities of the disease we have to describe, let us now proceed to the cases themselves.

John Coghlan, age 29, appearance robust; previous health vigorous, and habits temperate. This man was admitted into the Meath Hospital on December 7, 1837, and stated, that on the 1st of that month he had been seized with rigors, headach, stupor, &c. which had continued, with lassitude, to the time of his admission. On the day of his entrance the following report was made of him:—headach, cough with expectoration, and

* Bateman, Synopsis, p. 105. † Rayer, Malad. de la Peau, ii. 162.

pains in back; skin hot, but free from maculæ; bowels constipated; tongue dry, rough, and brown; pulse 80, hard and thrilling; urine muddy, and sleep disturbed.

Head to be shaved, leeches behind each ear, an antifebrile aperient of salts, senna, and scammony.

On the next day, bowels twice opened; evacuations black; had vomiting of dark fluid; tongue very dry and rough, and pulse 70, hard and thrilling; headach continues.

Blister to epigastrium, to be dressed with Morphine ointment; twenty-four leeches behind ears.

℞ Calomelanos gr. ss. Sacchari gr. ij.
M. Fiat pulvis, 4tis horis sumendus.

The hæmorrhagic pulse, and dry tongue, continued; the urine soon deposited a sanguineous sediment, and the dark colour of fæces was found to depend on their admixture with blood. Doses of diluted nitro-muriatic acid were administered every three hours, during two days; this medicine had no good effect; blood began to ooze from the gums and inside of mouth; hæmoptysis came on; the urine and fæces retain their sanguineous appearance; the pulse is still hard and thrilling, and the tongue as dry as ever. Citric acid was now employed without benefit; the general hæmorrhage continued, and the thrilling pulse was attended by violent and tumultuous action of the heart.

A draught consisting of Tr. Digitalis ℈j. Tr. Opii gtts. 5, Lactis Amygdalarum ℥j. was given every four hours.

On the seventh day from *that* on which the bleeding from intestines was perceived, an eruption of rather large red spots appeared on arms and thighs; the colour of these was removed by pressure, but instantly returned on its being withdrawn. All the symptoms progressed; the alvine and urinary discharges became very sanguineous, and the tongue and pulse retained their striking characters. The digitalis and opium were continued during five days, and effected no diminution in the quantity of blood discharged, and little, if any, change in the state of the

arterial system. Digitalis was next prescribed, in combination with diluted sulphuric acid, and still without success. The foxglove was then omitted, and diluted sulphuric acid, in large doses, with sulphate of magnesia were, substituted for it; still the hemorrhage advanced daily, the pulse retained its constant thrill, and the tongue its unalterable dryness. The cutaneous spots faded and disappeared; and, at this time, the disease advancing under the cautious administration of so many remedies, and the pulse still acting with incessant thrill, it was determined to try the effect of a small bleeding from the arm. Blood was drawn to ℥vi. and the mixture of salts and sulphuric acid was continued. The abstracted blood presented firm coagulum, some buff, and a large proportion of serum. The general symptoms were unaltered. Bleeding was twice resorted to, after this, to the same amount; and the blood withdrawn at these times presented firm coagula, with most distinct cup and buff. The bleeding, although it seemed to have no *injurious*, had no *beneficial* effect. The effusion of blood from mucous surfaces continued; the tongue was still dry and rough; the pulse hard and thrilling; the action of the heart retained its violence, and dicrotous pulsations became evident at the wrist. Copious epistaxis was added to his symptoms: acetate of lead, with opium, and acetate of morphia, with quinine, failed successively, as also did spirit of turpentine administered internally. The patient became exsanguinated, emaciated, and dreadfully weakened; constant vomiting of blood set in, and at last, on the 29th of December, after an illness of twenty-nine days, convulsions and death closed the scene.

A careful post mortem examination afforded no explanation of the fatal hæmorrhage; no organic lesion was discovered, and the only morbid appearance was a number of minute red spots dispersed over the surface of the mucous membranes. Such was the progress of this melancholy case, for the notes of which I am indebted to my friend aud former pupil, Mr. Barton, who at a meeting of the Medico-chirurgical Society, made the following observations upon it.

"For the sake of perspicuity, I shall briefly recapitulate the most important features in the above case, before proceeding to the consideration of its character. With regard to causes, predisposing or exciting, I can assign none to account for the disease. The patient had been strong and healthy up to the accession of his illness. He had never been accustomed to unwholsome diet, nor had he ever indulged in habits of intemperance. Febrile symptoms ushered in his malady. On admission into hospital, his two most marked affections were an exceedingly dry and brown tongue, and a hard and thrilling pulse. (The thrill was not dicrotous, though dicrotous pulsations were afterwards perceptible; it conveyed the sensation of small, sharp vibrations, accompanying each beat, a kind of wiry trembling.) These signs continue; bleeding from the intestines and urinary system quickly supervenes; this increases, and at length the whole mucous system of the patient becomes the seat of copious hemorrhage. A peculiar exanthematous eruption appears upon the skin in this stage of the disease, lasting during five days, and never presenting any signs of extravasation. During twenty days the hemorrhage obstinately advances, defying alike an astringent, a sedative, and an antiphlogistic treatment, and at last, triumphant over all the opposing efforts of medicine, hurries its victim to an early grave.

"I request, that you will particularly bear in mind three circumstances in this disease, namely, the permanent dryness of tongue, the extraordinary thrill, and hardness of pulse, yielding only to the withering influence of approaching death; and lastly, the peculiar nature of the cutaneous eruption; as these will form important points in the subject of classification."

Such are the notes Mr. Barton has made of Coghlan's disease, which bears a striking similitude to that of another patient admitted on the following November, and whose case was taken by my indefatigable friend, Mr. Thomas Moore.

Case II.—Michael Parker, æt. 34, a labourer, of strong muscular development and sanguineous temperament, was for-

merly much addicted to spirituous potations, but of late has in a great measure abstained from their use; for several years has been subject to repeated bleedings from the nose, generally preceded by cold, a sense of heaviness and sometime pain in the head, always relieved by its supervention: whilst in a state of profuse perspiration, fourteen days ago, he took some cold water, and was immediately attacked with rigors, slight nausea, and considerable lassitude; in the course of a few hours, bleedings from the nose, mouth, and bowels, came on, continuing to flow with vigour till venesection was performed, when instant relief and complete cessation of the epistaxis were the consequences; two days afterwards there was a return of the bleeding from the nose, and the other symptoms above mentioned, when the same operation was resorted to, and with considerable efficacy; since then, up to the present time, he has had frequent attacks, but of a much milder character; from the first attack he thinks not less than one gallon of blood must have been lost.

Since his admission into hospital, he has been spitting up blood of considerable consistence, clotted, of a dark colour, and mixed with frothy sputa; his general appearance is bloated, particularly about the face; the skin being slightly yellow, better marked in the conjunctiva of both eyes than elsewhere; the nose is clogged with blood; tongue, teeth, lips, gums, all the upper and posterior parts of the mouth are covered with a hard, black substance, evidently coagulated blood; on its being removed from a portion of the gums, they commence bleeding afresh, the blood apparently oozing out from a number of minute apertures, not larger than the perforations produced by the prods of pins; percussion and respiration natural over all parts of the chest; some epigastric tenderness, but no pain induced by pressure over the hepatic region, neither is there any evident enlargement of the liver; bowels confined; stools have latterly been of a black colour, being sometimes mixed with a quantity of blood; has no appetite; pulse 48, full, hard, and thrilling; respiration slow and easily performed.

Applicentur Hirudines vi. Epigastrio, et
Solutio Aluminis saturata dentibus, linguæ, &c.
℞ Sulphatis Magnesiæ ℥vi.
Acid. Sulph. dil. ℥ii.
Infusi Rosæ ℥viii.
M. Sumat ℥ 2dis horis.

3rd. Leeches bled profusely, affording much relief to the pain in epigastrium; lost but a small quantity of blood from the mouth since yesterday; had some sleep; bowels costive; pulse 52, full, strong, and bounding.

Repr. Mist. Infus. Rosæ, &c.
Habt. Enema emolliens statim.

4th. The stools produced by injection were free from blood, but of a dark colour and very fetid odour. A return of the epistaxis occurred this morning, much more copious than for some time past; in the course of about half an hour, a pint of florid red blood flowed from the right nostril, which, when the head was inclined backwards, trickled down the œsophagus, through the posterior nares; his countenance has become anxious; cheeks livid, and respiration more hurried. Pulse 52, strong, full, and at present compressible.

Omittr. Mistura ut supra præscripta.
℞ Acetatis Plumbi ℥ss,
Opii in Pulv. gr. ii.
Pulv. Glychirrhizæ
Mucil. G. Arab. a a g. s. ut fiant Pilulæ xvi.
Quarum capt. i. omni hora, et post quatuor doses, i. 3tis vel 6tis horis.

6th. After much trouble and difficulty, the bleeding from the nose was checked by plugging the nostril with lint dipped in an astringent solution; since then it has not returned; over the surface of the body an eruption, ushered in by a tingling sensation, resembling the sting of nettles, has made its appearance, more advanced on the thighs, left arm, tips of the shoulder and back of the neck, than any other part, and is of a

dark red hue. Pulse slow, full and strong; bowels confined.

Repr. Pilulæ. Habt. Enema emolliens.

8th. Has had no recurrence of the bleedings since 4th; was last night seized with sickness of stomach and a vomiting of dark coloured fluid, resembling the colour of catsup, and depositing a coffee-ground sediment. From the bed and surface of the body generally there is exhaled a peculiar, disagreeable odour; the eruption is fading, and the skin presents a dusky yellow colour. Passes each night in sound sleep, and seems very much inclined to remain in that state the entire day; complains of urgent thirst and total loss of strength, being unable to walk without assistance. The liver has evidently become increased in size since admission; no pain however is caused by pressure. Tongue furred and quite dry; pulse 68, thrilling; bowels regular; stools not tinged with blood; urine natural.

Omittr. Pilulæ; applicetur Vesicat. ampl. Hypochond. dex.
℞ Acidi Nitro-muriat. ʒii.
Decocti Hordei lb. i. M. consumatur quotidie.

9th. A considerable bleeding from the bowels came on during the night; of its occurrence, however, he is quite unaware; the sheets and bed are stained of a florid red colour, and also on them is a quantity of blackish matter similar to the coffee-ground sediment ejected from the stomach on the 8th. The fœtor is greatly increased, and can be perceived at the distance of several feet from the bed. Eruption has in a great measure disappeared from the body, but still remains on extremities; tongue the same; pulse 68, bounding and vibrating.

Omittr. Mist. Acidi Nitro-muriat.
Admov. Vesicat. ampl. toti abdomini.
℞ Spts. Terebinth. gtts. x.
Mucil. G. Arab. ʒi.
Sacchar. alb. ʒii.; Aquæ ℥ss.
M. Sumatur omni hora.
Habt. Vini rubri ℥viii.; Chicken Broth, lb. i. daily.

10th. Blood continues to flow from anus; on examination the parts seem excoriated, the slightest pressure causing the most excruciating pain; no recurrence of the vomiting or epistaxis has since happened. Tongue brown, parched, and rough; pulse the same; respiration slow; urine natural.

Admov. Hirudines vi. Ano. Repr. Haustus.

11th. Leeches produced a copious flow of blood; had one costive stool mixed with blood this morning. Pulse 66, a little softer; abomen soft and free from pain; eruption has almost disappeared from the body; is losing strength very fast.

℞ Pulv. Rhei ℈i.
Sulph. Magnes. ʒss.
Sulph. Kali ℈i.
Spt. Tereb. ʒi.
Aquæ Menth. Pip. ʒi.
M. Fiat haustus statim sumendus. Repetantur alia.

12th. Continues to pass blood and the coffee-ground sediment from the bowels as hitherto; is remarkable heavy and stupid; has no appetite, but great thirst; countenance pale, and surface of the body assuming a blanched hue. Pulse 68, strong and thrilling; in other respects the same.

Repr. Pilulæ Acetatis Plumbi c. Opio Haust. omissis.

13th. Died at 5 o'clock A. M. No post mortem examination.

In addition to the observations already made, the following particulars require special notice. *First,* in both these patients, the disease proved fatal in about four weeks. *Secondly,* in neither did the pulse exceed the natural frequency, being about seventy in Coghlan, and about fifty in Parker. This circumstance tends strongly to distinguish the disease from hemorrhagic fever; it is worthy of remark, too, that there was no febrile disturbance of the nervous system, no headach, raving, or even want of sleep. On the contrary, until the system suffered

from excessive loss of blood, the functions of the nervous system were quite unimpaired, and the patient looked and spoke in a manner quite different from that of fever patients. They were, almost to the last, perfectly rational, and in the beginning of the disease their strength was not remarkably impaired; their strength in fact yielded, and that gradually, not to fever but loss of blood. I dwell on this, because some of my friends suggested the idea, that these men were affected with hemorrhagic typhus. *Thirdly*, the eruption in both was slightly elevated, and evidently constituted an efflorescence or rash, and disappeared in five or six days altogether, thus entirely differing from the spots of purpura. *Fourthly*, the disease, in the first instance, seemed almost exclusively confined to the arterial and capillary systems of vessels, and did not engage the nervous respiratory or digestive systems at all in Coghlan, while in Parker neither of the two former systems were implicated, but the stomach and more especially the liver seemed affected, circumstances in all probability not essentially connected with the disease, but attributable to his drunken habits. *Fifthly*, were I again called on to treat a similar case, I would in the beginning use depletion by the lancet to a much greater extent.

As the subject is of importance, and possesses, if I mistake not, considerable novelty, I shall, notwithstanding the risk thereby incurred of appearing tedious, subjoin the remarks made by Mr. Barton on Coghlan's case, a mode of proceeding I adopt with the less hesitation, as Mr. Barton professed he founded his observations on what he had heard at my clinical lecture.

"Dr. Watson, in the article Hemorrhage, in the Encyclopædia of Practical Medicine, mentions, beside 'congestion,' which could hardly have caused the extensive bleeding in the present case, two conditions of facts concerned in the production of idiopathic hemorrhage: these are, first, an alteration in the vessels or apertures through which the healthy exhalations are transmitted; this alteration depending on morbid debility and relaxation. Secondly, an attenuated state of the vital fluid. Now I do not

think that either of these causes can account for the sanguineous discharge in the case detailed above, and my reasons for this opinion are the following. First, that the thrilling and bounding pulse, and the violent action of the heart, together with the total inefficacy of tonic and astringent treatment in the above case, denote an energetic condition of the circulating system, not reconcileable with the supposition of a weakened state of the exhalant vessels. Secondly, that the natural coagulation of the abstracted blood is opposed to the idea of that fluid having existed in the circulation, in a depraved or attenuated state. If we were to judge of this case by its unyielding opposition to remedies, stimulant and antiphlogistic treatment having been equally unsuccessful we should be reduced to the necessity of supposing, that it had for its cause, a peculiar *hemorrhagic* action of the capillary vessels of mucous membranes, probably coexistent with, if not dependent on, an increased action of the whole capillary system. I am aware of the theoretical nature of this discussion, and dare not offer an opinion on a matter so far beyond me. But the question suggests itself, whether in these cases of idiopathic hemorrhage, the capillary vessels may not be supposed to assume some morbid action, tending to the effusion of pure blood, in place of natural secretion, and whether this may not exist without any alteration in the structure of the vessels, or in the physical condition of the blood within them. If such a state of the capillary system can exist, it might account for many forms of hemorrhage, which are now supposed to depend upon some mechanical alteration in the solids or fluids, and would, I think, sufficiently explain the phenomena presented by the disease before us, which cannot be explained by the supposition of structural change.

" There are but two diseases described by authors, whose symptoms bear any marked resemblance to those of the disease in question ; these are, purpura and scurvy; and it now becomes my task, to shew some very important distinctions between these somewhat similar affections.

"In all these diseases, one great feature is alike; namely, the occurrence of *general internal bleeding;* this is common to them all, but there are some striking peculiarities in the case described in this paper, which will doubtless be allowed to entitle it to a distinct and separate chacacter: to these I beg leave to direct your attention. First, then, to engage in the inquiry, whether our case was one of *purpura.* Dr. Goldie, in the article 'Purpura' in the Encyclopædia of Practical Medicine, describes that disease in the following manner: as characterized by an effloresence on the skin, of red, purple, or livid spots, of various sizes, accompanied by hæmorrhage from various parts, chiefly from mucous surfaces; he proves that the spots consist of effusions of blood under the cuticle, and says with regard to them, 'they are therefore essentially different from every form of *rash,* or other cutaneous eruption, and are properly considered as the result of cutaneous hæmorrhage.'"

"Here, then, it is evident, that in purpura, the cutaneous eruption is the most characteristic, and that it is the consequence of small extravasations of blood. In the case before us, the eruption only existed during five days out of twenty-nine; was then partial, and did not arise from effusion of blood, for it presented throughout the precise properties of an exanthema, disappearing on pressure, returning instantly, and fading gradually. Again, the purple spots produced in purpura by *pressure,* never appeared in the case before us. The eruptions of these diseases are, therefore, perfectly contrasted; the pulses also differ as widely from each other. Dr. Mackintosh describes the pulse of purpura as varying much in different cases; in some being quick and weak, in others, full and intermitting; but in none is there the smallest approach to the permanently thrilling, or to the dicrotous character of the pulse in the disease before us. The state of the *tongue,* although it seems to me to be far less connected, than that of the *pulse,* with the disease we are considering, was yet equally remarkable. The last distinctive mark between these diseases, to which I shall direct your notice,

is the fact of no ecchymoses having been detected in the above disease, signs which so often appear in the autopsy of purpura. It would appear, then, that too many and too important differences exist between the case I have detailed to you, and the disease of purpura, to allow of their being classed together.

"To extend this examination, I will now consider whether scurvy is more allied than purpura to the disease in question; and on the very threshold of this inquiry a mark of distinction is perceived, which afforded no assistance in the previous comparison, I allude to the causes of scurvy. It must be confessed, that the causes of *purpura* are often as obscure as were those of the disease under consideration, but not so with scurvy. There is no disease more plainly traceable, than scurvy, to manifest causes; and I can discover no account of scurvy having ever suddenly attacked a man in the prime of life and health, accustomed to wholesome food, and subject to no evident morbid influence. The disease of which I speak did, however, arise in this sudden and inexplicable manner; the mild symptoms of a febricula having been its only premonitory signs. This distinction, together with others of still greater importance, when added to the rarity of scurvy in the present day, will, I hope, be deemed conclusive as to the want of connexion between these diseases. All authors have agreed in assigning to scurvy a morbid and depraved state of the vital fluid. We have accounts of the veins in scurvy having poured forth a black and putrid stream; and we are assured, that all cases of scurvy are *characterized* by what is termed a dissolved state of the blood; its tenuity disposing it to flow from its proper channels in the form of scorbutic hemorrhage. But the blood in the disease before us was the very opposite to this; in place of *tenuity*, it had *firmness;* instead of *putridity*, it possessed, in the *worst* stage of the complaint, all the appearances of increased vitality. The hæmorrhage, then, in the present case, wants the all-important characteristic of scurvy!!—but we may add to this, the oft-repeated state of the pulse in the disease whose novelty I advo-

cate. The pulse of scurvy is *weak*, participating in the general debility; that of the disease before us was *permanently strong*, and *markedly hæmorrhagic*. If these considerations are not sufficient to stamp the two diseases with different characters, add to them the inefficacy of the magic cure of scurvy in our new disease. Citric acid, the infallible scorbutic remedy, was useless in the case before us; may we not then safely infer, that scurvy cannot be confounded with the disease I have described to you?"

Such are the reflections which these cases, and my clinical lectures on them, excited in the mind of Mr. Barton, to whose remarks I have to add the following:

From some experiments by Dr. Charles Maitland of Brighton, detailed in his excellent Prize Essay on the Physiology of the Blood, it appears, that when several successive venesections are performed on an animal, the proportion of fibrin increases each time blood is drawn. As the author remarks, this result is "rather extraordinary, for we should not have expected that the fibrin of the liquor sanguinis would increase, while its albumen is found to diminish." I am not prepared to say whether a similar increase of fibrin occurred in our two cases, but certainly there did not appear to be any diminution of the size or firmness of the clot.

As to the hardness and thrilling character of the pulse, it was very remarkable, but it is difficult to determine whether it depended on the action of the heart, or on some peculiar functional derangement of the arterial system, or on some diseased condition of the capillary vessels reacting on the latter; but I am much inclined to think it connected with either, or both of the latter conditions, rather than any particular affection of the heart. In Parker I observed something like a dicrotous systole, but it was very indistinctly marked, and in the other case it was absent; I am, therefore, disposed to believe, that the peculiar action of the pulse was wholly independent of that of the heart; we have many examples of this. I attended some time ago, with

Dr. Dwyer of the Lying-in Hospital, a gentleman in Parliament-street, labouring under maculated fever. It was about the tenth day of fever; the patient was extremely ill, unable to turn in bed, and scarcely able to swallow; labouring under tympanitis and subsultus, and yet his pulse had the very remarkable character which I have just described. It was thrilling, dicrotous, and hard. After firm pressure with my finger, I could feel the pulsation of the vessel below the compressed point; yet this was a man to whom we were obliged to give wine and stimulants, so great was his debility. Some time ago I met with a gentleman, whose pulse presented this hard, thrilling character in a very remarkable degree. He was a military man, equally distinguished for his energy and coolness; a person of calm temper and sound judgment; in fact, apparently anything but a nervous or irritable person, yet his pulse differed remarkably in its action from the heart. Both were slow, but while the action of the heart was calm and natural, that of the pulse betokened high excitement; I never felt such a pulse, even in cases of pleuritis, or pneumonia, or rheumatic fever; yet it was seldom above sixty in the minute. The first time I had the pleasure of his acquaintance, he came to consult me for a slight cold; he looked well, his chest was apparently but little affected, and I thought I never saw a patient with less to complain of. Before I dismissed him I felt his pulse, more as a matter of course than from any curiosity as to the state of the circulation. On laying my finger on the artery I felt quite alarmed; I ordered him immediately to bed, and sent for the family apothecary, to whom I gave directions to bleed him largely. I visited him next day, and found every thing going on well: sleep, appetite, digestion, respiration, all natural, but his pulse was just the same as before. It bounded under my finger with a degree of force, and wiry hardness, truly astonishing. I paused, just as I was about to use the lancet again, and determined to wait some time longer and watch the progress of the case.

The gentleman continued to improve, and got perfectly well, but the pulse remained as before. As he was a military man, and liable to be brought into contact with strange physicians, I thought it necessary to give him a certificate, stating the character of his pulse; for if he happened to be attacked during his service with any species of illness, and a stranger to his constitution were called to prescribe for him, he would most certainly take out his lancet immediately, and bleed him to the amount of one or two pints.

I mention these cases to show, that the state of the pulse is not an infallible guide, capable of directing our practice on all occasions, and that the action of the pulse depends upon something besides the heart.

There is always something in disease accompanied by loss of blood, calculated to awaken our sympathies. Loss of blood appeals directly to our animal instincts, and few can witness it without running to the succour of the bleeding person. The physician will pass by other cases with no other sympathy than ordinary attention, but his feelings are affected by hemorrhage, as well as those of the by-standers, and his assistance is, therefore, given with a promptitude, seldom bestowed on other diseases.

Loss of blood, besides its immediate effect, is also likely to produce changes which are long felt in the system; persons after profuse hemorrhage are liable to suffer long after the accident, and though the functions go on as before, and the loss is repaired, yet a certain languor generally remains, accompanied by paleness of the lips and face. I have seen several instances of this; the persons look blanched and white, like pieces of wax or marble. I recollect a lady, who after extensive loss of blood, remained for several years as pale as wax indeed; she never thoroughly recovered her natural complexion, and looked like a person in the last stage of chlorosis. The same thing occurs in chlorosis, in which the blood appears to be manufactured slowly, and of a deteriorated quality. This state

however, differs from the former, for it may be wholly removed, and the patient restored to her natural complexion; but, any person who remains for a few months pale, from loss of blood, seldom or never recovers the hue of health.

There is at present in Kingstown, a man who was bled nine times in three days, (each time largely,) for an attack of acute pneumonia, and though nine years have elapsed since, he has still the colour and aspect of a person about to faint from loss of blood. A lady of my acquaintance underwent a similar excessive course of phlebotomy, thirty years ago, and is still remarkable for her extreme pallor, a fact strongly confirmatory of the truth of the account which *Tacitus** has so graphically drawn of effects of loss of blood on Seneca's widow, who wishing to bleed to death along with her husband, was saved by the orders of Nero, "ne glisceret invidiâ crudelitatis." But the tyrant's object was not accomplished, and she remained for many years, adds Tacitus, a memorial of her husband's fate, "*ore ac membris in eum pallorem albentibus, ut ostentui esset.*"

(*To be continued in the next Number.*)

Art. X.—*Observations on the Uses of Alkalies and Acids, in Health and Disease.* By Frederick Rowe, Esq.

[This interesting Essay obtained a prize at the Meath Hospital, in 1837, when Mr. Rowe was a pupil.]

The knowledge we possess of the mode in which medicines produce their effects on the living body, is exceedingly limited, and it is probable that we shall never be able to explain such effects either from the chemical or physical constitution of the agent employed.

The modifications of vital influence which substances produce when taken into the stomach, do not appear to bear any

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* Fifteenth Book of the Annals, chap. 63.

relation to the sensible qualities of such substance, and hence the data upon which they are administered become reduced to facts derived from experience. Indeed we apply our medicines, mark the effects they produce, and regulate our succeeding administrations of the remedy, by the effects last produced.

The science of materia medica has not (like most other sciences) undergone any considerable alteration in its principles since medicines were first employed. It commenced in the observance of certain facts, elicited frequently perhaps by accident; these have gradually accumulated, intermingled, of course, with things that are false, until a "rudes undigestaque moles" has grown up, to which, even now, the avowed empiric and the calm inquirer after truth are equally at liberty to make additions, simply because we cannot subject its constituents to the scrutiny of fixed principles or laws.

In many cases, as for instance where vegetable compounds are administered in their natural states of combination, the difficulty in which we are placed of determining the power and *modus operandi* of medicines, is rendered still greater by our inability to determine the precise agent to which the effect may be ascribed; but in observing the effect produced by the alkalies and acids, it will be evident that many disadvantages which we should encounter in the investigation of such agents as these, cannot possibly exist, and if ever an advance towards precision is made in the science of materia medica, many circumstances point them out as the agents most likely to lead to definite reasons for the uses of medicine, and we venture to predict, that they will be the first whose mode of operation will be well understood.

The simple state in which they exist, their possessing such evident characters, their power of resisting great changes, (at least the alkalies,) as of digestion, &c.; their capability of being traced, and their proportions observed, whether free or in combination, in the different fluids, are all circumstances which give a greater facility to the investigation of these bodies.

The great difficulty, however, of accounting for modifications of vital action from the composition of the agent employed, is felt in the inquiring into their properties in common with all other bodies, and this will ever oblige us to be guided by facts, however unaccountable, in preference to apparently well grounded theories, and in the treatment of living bodies, to place little dependence on chemical laws, to the exclusion of those which regulate organized beings.

Our inquiries into the properties of these substances, will be more with a view of determining the principles of their operation, than merely narrating long received notions or facts concerning them, which we shall only take as our assistants, or as illustrations to the principles we wish to enforce; and hence, instead of mentioning each particular disease in which either class may be indicated, we shall consider the establishment of principles for their administration, as of paramount importance, leaving to others the deductions to be made from them.

The alkalies and acids, undoubtedly sustain an important office in the animal economy, for if we believe that nothing is without its use, and that even trifling circumstances are intended for certain ends, we cannot suppose that their presence in the fluids of the body is merely accidental, for their general diffusion; their bearing in health such unvarying proportions to each other, and to the fluids in which they exist; their being not merely tacitly received, but instinctively sought for in some form or other by animals; all point them out as being intended to fulfil some purposes, which by their absence would be unfulfilled.

These purposes, it would, no doubt, be difficult to determine precisely, but the properties recently ascribed to them by Dr. Stevens, of being necessary to the production of the bright arterial colour which blood receives on exposure to the atmospheric air, give them a claim to investigation, which promises to be of a most interesting character.

One of the most striking circumstances in their history is

their presence in all the textures and secretions and excretions of living animals as well as in vegetables; they in fact form part of the constitution of those bodies, and are evident in all stages of organization from the lowest to the highest.

With respect to their proportions to the other constituents, and the influence they bear in disease, we shall have occasion to allude to them in a subsequent part of this paper.

As a counterpart to the fact just now stated, that the presence of alkalies and acids is essential to the right performance of the functions, we perceive, that animals generally, including man, instinctively seek them, and if prevented from obtaining them, those functions are at least imperfectly performed.

It must of course be admitted, that in order to the presence of substances in the body, their elements, at least, must have been received from without, the vital influence or organic agent (of Prout) does not create materials, it merely modifies those presented to it. It will also appear evident, that most of the component parts may be formed by even the elements of the simplest bodies, air and water for instance; but if the views which are entertained of the chemical constitution of the alkalies be correct, by which we believe them to be compounds of simple basis, with oxygen, we at once see, that they must in their own forms be received from without, since no compounds of the ordinary elements will form them.

Although not immediately connected with the present part of our subject, we may observe, that as no effort of a secreting organ can form an alkali, these at least must have been present previous to the act of secretion, where they are found in the secretions, and were merely separated by the organ not fastened by it, and renders it probable that other constituents of the product of secretion are likewise separated, not formed, at the moment.

This mode of reasoning has been thought by some, even of the present day, to be unsatisfactory, since they believe that where vitality is concerned, collateral circumstances are of little importance, and that whether the material, which enters into any

secretion, be present in the blood or not, is of little consequence, since they vest vitality with the power of creation, and entirely reject the maxim "ex nihilo nihil fit." Under the article Nutrition, in Rees' Cyclopædia, is an experiment by Dr. Fordyce, intended to settle this question, by observing whether fowls, &c. were capable of producing egg-shells containing carbonate of lime, when that ingredient was entirely extracted from their food, and he found that four canary birds so treated very quickly died.

The habits of man and instincts of animals will afford us abundant facts to exemplify these observations. Muriate of soda is used largely as a necessary of life by people of every nation; and although much of its beneficial influence is to be attributed to its primary effect on the digestive system, yet we must also remember that it furnishes one of the constituents so generally diffused through the fluids of the body from which the secretions are formed. Paris says, that in Great Britain about six pounds and half are, on an average, taken by each individual annually in bread alone; and the bad effects following its disuse are shewn by a circumstance alluded to in the Lancet, vol. xvi., in which it is stated, that it was at one time in Holland considered as one of the heaviest punishments to keep criminals on bread unmixed with salt. In the interior of continents, animals frequently travel immense distances in order to gratify their instinctive desire for it.

It is frequently also given to horses, and is said by jockeys to "renew" their constitution when almost worn out; on the same principle grazing in salt marshes is recommended for horses.

Another circumstance we mentioned as facilitating the investigation of the uses of these agents, is the power of resisting the changes which substances undergo when taken into the stomach, and it is worthy of further notice.

Few substances, besides water, pass the stomach unaltered, or are absorbed in the state in which they were received into it; in most cases the elements enter into fresh combinations, in

which all traces of the original from which they were derived are entirely lost; not so, however, the alkalies; almost the only change they can sustain is a combination with acids; we have no proof of their elements being ever separated; and from this it must follow, that powers are exercised over the economy, not by virtue of the elements, but in virtue of the properties of the substances themselves.

The use of the acids appears almost as necessary to the functions of life as the alkalies, and the desire for them nearly as prevalent.

If we take, for instance, the inhabitants of warm climates, they have their abundance of acid fruits, while in the colder ones we have, in addition to the use of fruits, our preparation of them, as our cider, and in the navy, lime juice. The Russians, again, have their Sauer Kraut, &c.; but it may be doubted, whether their effects are any further salutary than as correcting a morbid tendency by their immediate influence on the nervous system; they probably are not, as the alkalies, taken for purposes ulterior to their primary effects. It is exceedingly probable, that the vegetable acids, at least, however largely taken, never exist as acids in the circulating fluids; we know that most of them are acted upon by the gastric secretions, and cease to exist in the form administered, their effects as acids terminating with their existence, while the alkalies, from their power of resisting this change, in addition to the general influence they exercise on the nervous system, from their application to the stomach, may influence the functions of the various organs to which the fluids containing them are conveyed, as is shewn by the effects they produce on the kidneys and bladder.

Besides the power which the stomach has of separating the elements of the acids received into the body, we find that we are less dependent on an external source than is the case with the alkalies; for there is a power of generating them, as is seen by the enormous quantities occasionally seereted in some forms of disease. In cases of dyspepsia, immense quantities are se-

creted, a striking illustration of which was afforded in the case of a woman, a patient in the Hospital of Incurables in this city, a few years since. We see the kidneys capable of forming acid, so again the skin. "The vital influence, in fact, is so far instrumental in the formation of acids, that all the products of this power are more or less acid."—*Dict. Pract. Med.* p. 288.

We here see a little of the fallacy of relying upon chemistry alone to guide us in the administration of remedies. If the above views be correct, it may be in vain to give antacids where a morbid disposition to their formation exists, and it may not be necessary to withhold acids from a dread of increasing the disease, especially when the deranged functions giving rise to their formation may be so modified as to prevent their secretion.

The operations of alkalies and acids have been so far recognized at different times, as to have attributed to their agency, from the supposed predominance of either one or other class, almost all the diseases to which man is liable; but as those opinions being founded upon hypothesis, had nothing to support them, they were soon generally disregarded.

At the present time, however, we find an increasing desire for the cultivation of animal chemistry in all its branches, and bringing to the standard of truth opinions that had been maintained, merely to uphold preconceived theories.

The Gulstonean lectures, delivered in London by Dr. Prout, may be considered as among the most brilliant productions of that talented man; and the time of their delivery may probably be dated as the commencement of a new era in the science of animal physiology and pathology, by his having attempted to draw aside the veil hanging over the laboratory which life superintends, and being determined to make one step further towards attaining a knowledge of the secrets going on within.

Andral, Bichat, and others, in their considerations of disease, take into the account the effects arising from altered composition of the constituent parts of the body generally, while the attention of Stevens, Clanny, O'Shaughnessy, and a few other British prac-

titioners, has been directed more particularly to the relations which the saline ingredients bear in health and disease; and they have not only proved that they are continually varying both in the secretions and their source of blood, but that in the latter, in some diseases, they are almost entirely deficient.

Dr. Clanny has observed, that in typhus the salts of the blood are reduced from thirteen parts to two parts in the thousand, and the fact of their diminution in cholera, and the treatment proposed for this circumstance, are too well known to need more than mentioning. In this disease Dr. O'Shaughnessy has said, they are reduced more than one half.

The observations made by these scientific men certainly claim our attention; but, I imagine, we are by no means certain that these particular diseases owe their essential characters to the facts alluded to. The deficiencies of salts are generally subsequent to the supervention of disease.

As the saline ingredients exist in all the excretions of the body, and, as we before stated, we are indebted to external supply, at least for the base of neutral salts, we need not, I think, at the termination of a protracted typhus fever, be surprised at the fact which Dr. Clanny announces; for in this disease increased evacuations have drawn largely on their common stock contained in the blood, at a time when the sources from which they are derived are cut off, as the depressed vital powers are insufficient for their elimination and absorption, in order to a further supply.

In cholera these views are still more decidedly borne out, for in this case diminution of salts in the blood is a mere consequence of the immense fluid secretions which characterize the disease.

A superabundance of saline ingredients has also been considered capable of producing disease; and Dr. Stevens has said that scurvy is to be accounted for in this way. The fluid state of the blood, he says, and changed colour, are produced by excess of salts, just as a similar state is produced by them in blood

out of the body; but I believe the opinion is at present founded on hypothesis. The quantities of the saline ingredients may be altered by every means calculated to alter the quantities of the fluid excretions of the body; if they increase to an inordinate degree, it is probable that, as they contain salts, the quantities in the blood will proportionally diminish, and this increase, in itself a mere primary lesion of secretion, may thus become the cause of secondary disease.

This opinion of the changes resulting to the blood from altered secretions, has been maintained by Andral and Bichat; and, although they have not specially applied it to the salts, it will be obvious that it does apply to them, even more decidedly than to any other ingredients the blood contains, since they are contained in all the secretions, and any one of them altered in quantity may be followed by the effects mentioned.

It is frequently the case, in the treatment of disease, that the functions of secreting organs are intentionally increased, in order to produce general depletion and revulsion, as in the administration of purgatives, diaphoretics, diuretics, &c.; but it should be remembered, that if long continued, an effect different from mere sanguineous depletion will be the consequence. If blood be drawn, the healthy proportions of the saline ingredients will be preserved in what remains; but in producing by means of medicines watery stools, or increased diuresis, the proportions of the different component parts of the blood will be disturbed, and if salines be necessary in a certain proportion in the blood, ulterior unpleasant effects will follow.

In all diseases of long standing, in which there may have been profuse secretion with defective nutrition, similar results will follow. In cases of long protracted phthisis, for instance, there must have been immense expenditure of salts; in the profuse perspiration, the enormous quantities of matter expectorated, the continued diarrhœa, &c.; and it would, I conceive, be only rational in such cases to administer small doses of such salines as are recommended by Dr. Stevens in cholera. Dr. Clanny

has proved by direct experiment, that the salts of the blood in this disease are actually considerably diminished.

These views also support the plan of abstaining from large quantities of fluids, and the injurious tendency of exclusively fluid aliments in this disease, while they also enable us, in some measure, to offer a reason for the opposite plan being so beneficial, and supported by experience, not only in this, but in other countries. Clot Bey says it is the practice in Egypt, where scrofulous patients are restricted to the use of dry solid articles of food.

It will be remembered, that the fluid secretions are those containing the salts, while the solid excretions, according to Berzelius, contain a merely insignificant proportion of them, so that the indication is in phthisis to restrain the former, and substitute the latter.

But we now pass on from these general observations to a few illustrations of them, as shown in different forms of disease; and it will be necessary to observe, that it is not our intention to give a minute detail of the peculiarities and uses of the alkalies and acids, in all their different forms and preparations, or in each particular disease; but it will be our endeavour to analyze the principles upon which they are given, and the application of those which may be established will be left to others.

We commence with the alkalies. Potass and soda, in different forms, have long been used in medicine, and their effects have been usually attributed to their chemical power of neutralizing acidity of the stomach, or other organs. They have been administered in a variety of forms, each intended to fulfil different purposes, but such preparations of them only as allow them to exert their alkaline effects, will at present come under our notice.

In making selection of such preparations some uncertainty is felt, as to whether those forms in which they are administered in combination with acids, forming neutral salts, should be included, for it may be the case that such combinations may be

decomposed, the elements of the acid separated, as before described, while the alkalies resisting such change, may act in their free state. Paris asserts, that at least the compounds with vegetable acids are affected in this way, and is inclined to the opinion, that in many cases in which neutral salts are given, the effect of the alkaline base is quickly exerted, which is not prevented by even an excess of the acid, as in the instance of the potassæ bitartras, in which the effect of the acid is only temporary, while the alkali is to be discovered after some time in the urine. The medicinal powers of these agents, as alkalies, will abstractedly engage our attention, whether administered in their pure forms, or in combination with the weaker acids.

The diseases in which they have been administered have been principally those in which, as was before stated, they were supposed to be indicated by their chemical properties, and one of those states in which their use has been particularly supposed to be called for, is the morbid secretion of acid in some forms of dyspepsia. On the same principle, also, they have been employed in affections of the urinary function in which acid is generated, but they have also been found beneficial in some forms of disease, in which they cannot be supposed to produce their effects, except on the same principle as medicines generally, viz.; by their simple operation on the vital powers, governing secretion, for instance, as alteratives or tonics, in scrofula, skin diseases, &c.; although, even in such cases, their good effects may be partly owing to their supplying any deficiencies in the saline constituents of the circulating fluids.

The principle upon which they may be administered, in these forms of disease, it will be necessary more particularly to inquire into.

In dyspepsia, those who have paid more attention to symptoms, than to the pathological states giving rise to them, have at all times combated by alkalies one of the most distressing symptoms, viz. the excessive secretion of acids, which is sometimes to such an extent, as that the stomach, under such circumstances,

has been compared by Kempf to a vinegar brewery. It will be obvious, however, that unless the state giving rise to this morbid secretion be also corrected by the remedy employed, the treatment will, at best, be only palliative: probably in the end injurious.

If it be the case, as is stated by Berzelius, that the secretions of the stomach are naturally acid, and that this being the healthy state, is best fitted for the digestive powers of the organ, it would appear, that a free use of alkalies by neutralizing necessary, as well as superabundant, acid, would rather occasion a necessity for a further supply, as absolutely necessary for the digestion of the food, and it is probable, that by frequently neutralizing all acids, the disposition or necessity for their secretion must be so increased, as to occasion the disease for which they were intended as remedies.

A person in health, who would habitually take large quantities of the alkalies, would in a short time be the subject of acidity of stomach.

Preparations of potash and soda, then, in dyspepsia, can, by virtue of their chemical qualities, be regarded only as palliatives, and administered when the secretion of acid is so profuse, as to occasion unpleasant effects from its mere presence, and the remedies for this state must be looked for in medicines likely to affect its cause. It is to be observed, however, that besides this chemical action of the alkalies, they may afford relief from their power of allaying the irritability of mucous membranes, with which they come in contact. Howship, in his work on Urinary Diseases, is not even willing to grant to them this power separate from some chemical effects produced by them; he says, that they slightly (chemically) act upon the parts with which they come in contact, so as to change their texture, and as a consequence, the part is unable to transmit the ordinary impressions. This explanation, however, we should not receive, since, if they acted as a caustic on the coats of the living stomach, in the state of dilution in which they are usually given, the texture of

that organ would soon be altogether destroyed, and we should probably do more wisely, to refer the effect of allaying irritability to an impression made on the organic sensibility of the part.

When given as palliatives, they are generally preferred in the state of carbonate, unless the evolution of gas in the stomach prove annoying; and I have heard it observed, by persons taking both potass and soda alternately, that preparations of the former, when taken, produce far less unpleasant sensations in the stomach afterwards, which is probably to be accounted for by the formation of muriate of soda when the latter is employed.

We pass on to another class of diseases in which they are administered, viz. those connected with deranged urinary functions.

The views which lead to the use of alkalies in this case, are similar to those which lead to their use in the disease just noticed; as in that they were intended to correct acid secretions of the stomach, so in this, to correct those of the kidneys, which give rise to depositions of lithic acid.

That the alkalies are capable of altering the states of the urine, is proved beyond doubt, and the application of animal chemistry to useful purposes has in no instance been more fully exemplified, than in the administration of remedies to correct morbid states of this fluid. It would be quite superfluous for me to give even a summary of the treatment requisite in each particular form of calculous disease; I shall merely examine the circumstances which appear to call for the use of alkalies, and the mode of operation of these bodies under these circumstances. As in the case of dyspepsia, we must keep in mind, that the formation of acid is generally a symptom of an existing disease or lesion of function; and the observations just made on the uses of alkalies in that disease will equally apply to the one under consideration. A morbidly acid state of the urine is found to depend on vital causes, over which the alkalies, chemically considered, can exert no influence. An impaired digestive

function giving rise to acid secretion, imperfect cutaneous function, as shewn by the greater frequency of lithic acid deposits in cold climates, (Marcet,) excessive action of the kidneys from stimulating diuretics, will give rise to the state referred to; and unless the alkalies are also capable of removing such states, they can, in virtue of their own powers, be no more than palliatives, a circumstance rendered more striking from the fact of the kidneys possessing abundant resources for the secretion, if the disposition continue. As palliatives, however, they are of the greatest importance, since, while the morbid tendency is continued, they prevent the bad consequences which would result to the bladder and other parts, from the deposition of the acid secreted. In addition to their combining with the acid, they also exercise their sedative power already alluded to, lessening the sensibility of the over excited mucous membrane of the bladder, and thus greatly relieving the suffering of the patient.

The diuretic power of these agents is considerable in small doses, and is equally exerted, whether they be exhibited alone or in the form of neutral compounds with acids capable of being separated in the stomach, as the acetates, tartrates, carbonates, &c., and their effects are probably to be attributed to their stimulus on the kidneys from their presence in the blood.

Scrofula has been treated by both alkalies and acids. Mr. Carmichael, in his work on this disease, makes no mention of the latter, but as his views of the disease lead him to think, that many of its symptoms depend on excess of acid in the fluids, caused by morbid action of the stomach, he recommends the former, and prefers the carbonate of soda, in doses of ʒss. three times a day. Mr. Farr, in his work on the same disease, speaks most highly of the powers of caustic potass prepared by a formula given by him, by which means, he says, one of the characters essential to its producing its good effects, viz. its freedom from carbonic acid, is insured. The doses in which he gives

it are very large,—from ʒii. to ʒiii. three times a day, of his solution, which is stronger than the liquor potassæ of the pharmacopœias.

In all cases of scrofulous glandular inflammation, he highly extols it, and says it acts as a diffusive stimulant to the whole frame, increasing slightly the action of the heart and arteries; and again, "in cases in which biliary secretion is either deficient in quantity, or altered in quality, the alkali is serviceable both as a substitute for the secretion of the liver, until any morbid action in that organ is subdued by the use of mercury, as well as in its own more immediately specific capacity of increasing the force of the circulation, and invigorating the nervous system." The effect on the arterial system is, he says, to increase the pulse about ten beats, so that in phthisis, or any other disease, in which there is a quick irritable pulse, it should not be given until that quickness and irritability are removed. A long continuance of the remedy, he has found to produce petechiæ and bleeding of surfaces of scrofulous ulcers, but the immediate use of acids has removed these unpleasant effects. In direct opposition to the form recommended by Farr, Young, in his work on Consumption, says, he has found the continued use of the *supercarbonate of soda* to be most beneficial. Probably we have reason to conclude, from the views we have taken of their producing effects as constituents of the blood, in addition to their primary effects, that by alternating their uses, or giving them in combination, (potass and soda together,) still better effects would follow than from either long continued separately. In the fifth volume of the Medico-Chirurgical Transactions, are remarks by Dr. Bostock, on the case of a young phthisical woman who took from ʒii. to ʒiii. of carbonate of soda daily for a considerable time; the urine became alkaline and very copious, and the appetite and strength improved under its use.

The alkalies have been found serviceable in several forms of

chest disease, in which the mucous membrane, in particular, is irritable. Laennec, in endeavouring to account for this effect, says, it is probably from the remedy being brought in contact with, and acting upon the secretions of the part, so as to enable them to be more easily expectorated; but it is probably rather to be ascribed to the power they possess of allaying irritability, whether by actual contact or not, we can scarcely say.

In protracted bronchitis, in which the stimulating treatment is scarcely allowable, the effect they produce is very marked. Taken at intervals, between the paroxysms of spasmodic asthma, they are also productive of benefit, and their use in hooping-cough is, perhaps, to be accounted for on the same principles, the irritability of the mucous membrane of the bronchial tubes being allayed.

It has been before observed, that the acids appear almost as essential to the due performance of the functions of the body, as the alkalies. We see them instinctively taken by man, and their effects in disease appear to be equally marked and beneficial.

Their use has been attempted to be accounted for at different times, and certainly, some of the hypotheses have borne the appearance of being founded on scientific principles; but it is doubtful, whether we yet understand the mode in which the effects they produce are brought about, whether it be in virtue of their influence on the vital principle as acids, from their counteracting the influence of other agents, the results of morbid action, or from their affording certain elements to the body in a condensed and convenient form. As a familiar example and proof, however, of their influence, we need only refer to scurvy, and similar diseases, the ravages of which among our sailors, before their introduction, were truly frightful, as may be seen by consulting the voyages of Anson, and our older navigators.

In the nine years previous to 1800, the average number of sick sent annually from our navy to the different hospitals was 1 in 3·9, while after that period, it was reduced to 1 in 8·9, a difference almost wholly to be ascribed to the regulation by which each man is allowed one ounce of lime juice daily.

The ingenious explanation of Murray, by which he supposed their powers as refrigerants were to be accounted for, from the circumstance of their containing large quantities of oxygen, and thus, when taken, preventing the necessity for the changes to take place in the lungs, by which, according to Crawford, heat is generated, appears plausible, but as the doctrine which supports it is not itself established, we cannot be surprized that the superstructure should be liable to be overturned, and probably the views recently entertained by Dr. Stevens, of the changes which take place in respiration, will shake it to the foundation.

One of the most striking circumstances connected with the acids, is the great difference which exists between the actions of those with vegetable, and those having mineral bases, the more striking as they possess so many properties in common.

The vegetable acids are evidently intended for the use of man; they may be found naturally in all situations in which he exists, and in greater abundance at those particular times, when his instinctive feelings lead him to desire them. M. Halle in the Dict. des Sciences Medicales, even goes further, and says, they are in greatest abundance where the diseases in which they are indicated usually prevail, or to use his own words, "la nature toujours attentive, à mettre l'instinct, à coté du besoin, le remède à côté du mal, a multiplié les fruits acides dans les pays et dans les saisons dans lesquels ils sont le plus utiles, et lorsque les causes qui en necessitent l'usage viennent se developer, elle ne manque pas d'en faire naître en nous le gout et le desir."

If animal heat be proved to be generated by the changes which take place in the capillaries, by which carbonic acid is

generated, and at the same time the blood loses the arterial character, and acquires the venous, we may suppose that the acids have the power of influencing the capillary circulation, so as to modify, or I may say, restrain the actions taking place in them, and in this way I would account for their actions as refrigerants in disease, as well as their being used so largely in warm countries, or in the summer season; for as the medium in which we are under those circumstances, is not capable of withdrawing a superabundant portion of caloric, because its temperature is so little inferior to our own, we employ means, capable of restraining the actions by which caloric itself is generated.

The primary effect of the vegetable acids must be regarded as sedative, while the most prominent operation of the mineral acids is to give tone.

The principal instances in which the vegetable acids are employed are as antiseptics, as in the case of scurvy, just now alluded to, or as refrigerants in fever. In the former case, their principles may be also received into the circulating fluid, in the latter we may account for the benefit derived from their use, on the principle of their influencing the state of the circulating organs, as just now mentioned.

In all cases of great excitement the vegetable acids alone cannot be administered, for it is the property of an organ, when over excited, to produce acid secretions, as in the kidneys for instance; and if the more permanent acids in such case be administered, their effects are continued beyond their primary operation on the stomach, and may add to the bad consequences already produced by disease.

Let us continue the example of the kidneys: we know that in fever, acid deposits prevail in the urine, in consequence of the excited condition of the secreting organs; we know, too, that mineral acids are capable of exercising their powers beyond the limit of the impressions produced on the stomach, and may even add to the acid deposits produced by disease, whereas,

if vegetable acids be employed, from the fact of their not passing the stomach undigested, no such results would follow.

Dr. Fordyce, from a desire of acting up to nature, was accustomed to give, in all such cases, muriatic acid, because he said it was so generally used in the muriate of soda, but he had forgotten how natural it was to take vegetable acids, and probably his plan was not quite judicious.

The effects produced by the mineral acids appear to be more permanent than those produced by the other class, and there can, I conceive, be little doubt of their entering the circulation without decomposition, but probably in combination.

In the Medical Gazette, for May, 1828, is the case of a woman who poisoned herself with sulphuric acid, but whose last efforts were expended in giving birth to a child. On examination, the poison was detected in the cavities of the pleura, peritoneum, heart, and bladder of the child, and in the liquor amnii of the mother. It is found also, that when given to women suckling, it produces griping in the child, although it is remarkable, that the milk is not coagulated by its presence. The greater permanency of operation may probably be ascribed to this peculiarity of resisting change, as in addition to their primary operation in common with the vegetable acids, the mineral acids also affect the organs, to which, in course of circulation with the blood, they are applied, and in fact, in combination with the alkalies, form parts of the constituents of that fluid when healthy.

On the use of acids in dyspepsia, connected with acid secretion, we can say but little; it would appear, at first sight, that they were in such states contra-indicated. It has been before observed, that the states giving rise to acid secretions, are in general those of irritation or inflammation, and this probably is the case in the stomach, so that the question is not, whether the remedy possess acid or alkaline properties, but whether the morbid state will be affected by it? The

primary operation of acids is, as was before stated, sedative when taken in small doses. From the time of their application, even to the mouth, they appear to have the power of tranquillizing the system, allaying excitement or feverish disposition. This being their general operation, they might be considered useful in chronic gastritis or dyspepsia, but there is a question which would probably interfere with this conclusion. In the case before us, is it not improbable, that by coming in contact with the organ affected, they may produce effects similar to that from their topical application to external parts of the body, or to inflamed mucous membranes generally; and we know, in such case, their effects are ordinarily stimulant. Tartar emetic we know to be a powerful sedative in inflammation, but its upplication to the stomach in gastritis might, instead of allaying fever, increase it. This consideration of the effects of acids, would also lead us to inquire into the effects the secreted acid may produce while contained in the stomach, and whether it may not react on the organ producing it so as to increase the irritation. Dr. Stevens refers so much influence to this circumstance, that he asserts, that the gastro-enterite of Broussais is merely an irritation attributable to this cause, viz. the presence of secreted acid in the stomach. Taking these views as our guide, it will be evidently an indication to remove, or neutralize acid secreted by the stomach; and we may, I think, come to the conclusion, that although the effects of acids on the system at large would be to control the morbid disposition alluded to, yet from the circumstance of their coming in contact with the organ affected, they may produce effects which would counteract these produced on the system at large.

In cases of debility, unconnected with much derangement of the stomach, or in those in which, at least, acidity does not prevail, the acids are undoubtedly useful as general tonics; and probably this effect is rather to be ascribed to their supplying properties to the circulating fluids, than to their primary effects as acids, since we find the more permanent or mineral acids

are those only capable of producing such effects; those most generally employed are the sulphuric, muriatic, and nitric acids, or a mixture of the two latter.

The reasons for preferring either the one or other of these do not appear very evident, and probably from the views we have more than once alluded to, it would be better either to give them in combination or alternately, than confine our use to one.

The sulphuric acid is probably most generally employed, and the objections to its use are very few: one, however, is, that when long continued it is liable to affect the teeth, unless care be taken in its administration. Mason Good mentions the case of a lady, who, previous to the use of this remedy, had a remarkably fine set of teeth, but in which, after taking the acid, "the pearly enamel became yellow, and so diminished in thickness, as to be almost as thin as a razor, and frequently chipping off." The only acids, he says, which can have this effect, from their superior attraction for the lime which is combined with the phosphoric acid in the teeth, are the sulphuric, oxalic, tartaric and succinic.

In chronic forms of skin disease, Alibert has found the internal use of this acid followed by the best effects.

The nitric and nitro-muriatic acids are also employed as general tonics, and in addition to the purposes to which the sulphuric acid has been applied, these latter appear to have some peculiar specific influence on the functions of the liver, and are hence used in its diseases. Mr. Scott says, that "in almost all cases dependent on morbid secretion of bile, whether it be superabundant, defective, or depraved, he finds the foot-bath containing the mixed acids in the proportion of ʒiii. to each gallon of water, increase the flow of bile and ameliorate its character;" a statement very similar to that quoted from Farr on the use of *alkalies*.

In calculous affections, the vital as well as chemical changes,

are of course to be studied, as in the case of dyspepsia; but the acids certainly may be given as palliatives, and their administration regulated by the chemical properties. Marcet has laid it down as a general rule, and the same is enforced by Prout, that where alkaline deposits, or those of the insoluble phosphates, prevail, the acids are to be administered. In cases in which they are indicated according to this rule, it need scarcely be mentioned, that the mineral acids alone are to be relied on, and it will also be obvious, that if from any circumstances effervescing draughts be indicated, a mineral acid should also be employed, or the effect might be different from what was intended, from the liberation of the base from the vegetable acid in the stomach.

These short general observations on the uses of the alkalies and acids, tend perhaps to throw little additional light upon them; but it must be remembered, that accurate data upon which opinions may be grounded, upon this subject, are as yet exceedingly few, and those we have are so mixed up with the oft-repeated notions of crudity, alkalescence, &c. of the fluids, that it is difficult to escape the influence which such theories impart.

Some of the views which are given in this paper are, although perhaps not new, not ordinarily received, or at least no principles of treatment have as yet been derived from them in the treatment of disease, while others are at least not in the works that are in most general use, treating of this subject.

The interrupted and irregular manner in which this paper was written, and of which it bears such distinct evidences, are to be accounted for by the multiplied occupations of the writer, and the limitation of the subject to the consideration of the principles of action only of these remedies, may be attributed to the same causes.

I must present my essay, imperfect as it is, since time will not allow me to correct it; and at the same time, I feel assured

that all reasonable allowances will be made for the circumstances under which it was written.

Art. XI.—*Letter from* Dr. Blennerhassett *on Small Pox after Vaccination.*

TO THE EDITOR OF THE DUBLIN JOURNAL.

Tralee, May 15th, 1840.

Sir,

Though I had heard from other physicians of a few well attested cases of small-pox after vaccination, and had under my own care, in 1824, one of the worst cases of confluent small-pox, from which I ever saw a recovery, in a young gentleman twenty-two years of age, and who had been vaccinated by an intelligent practitioner, who kept a regular register of his cases, still my confidence in the anti-variolous power of vaccination was almost unabated, until the year 1835, when there occurred in the town of Dingle a small-pox, which seemed to set the influence of cowpock nearly at defiance. Certain I am, at least, that I saw in that year more cases of small-pox after vaccination, than in all my life before; and as two of those cases occurred in my own family, I can give a distinct answer to your second query.

Before briefly detailing the cases of my two sons, "I can take upon me to affirm," that I vaccinated them both myself with matter which Dr. Ferguson selected for me, at the Cowpock Institution in Sackville-street, within less than half an hour after I got it, and while it was still *liquid* on the glasses.

The eldest of these boys I vaccinated in 1817, the other in 1821, and neither of them had at the time any cutaneous eruption, or any other complaint. It may be easily supposed, that I watched the progress of vaccination in those two cases closely, and I affirm, that never were there more genuine instances of cowpock.

About the autumn of 1835, the small-pox was introduced into Dingle and the neighbouring villages, by one or two itinerant quacks, who inoculated the children of the poor at a shilling a head; the magistrates had previously endeavoured to punish one of those men, but found no law applicable to the case in Ireland, though I believe a law rendering such practice penal exists in England. About the month of November, in that year, when the complaint nearly disappeared in the town, one of my sons, (Thomas,) aged fourteen, was seized with severe febrile symptoms, which I treated as a case of common fever. On the third day, however, an eruption of variolous pustules appeared, when the febrile symptoms abated considerably, and the complaint went through the regular course of the distinct small-pox. Three days after the first boy was attacked, my eldest son, (William,) aged eighteen, suffered a similar attack of rigors and the other preliminary signs of fever, the pain in the head, limbs, and particularly in the back, being very severe. From the result of the first case, I was on the look out for the variolous eruption, and accordingly on the fourth day an eruption of minute pustules broke out, so thick and crowded every where, but particularly on the face, that I anticipated the worst and most confluent form of the disease. Nor was I mistaken, for so, in fact, it turned out; the fever assuming a good deal of the typhoid character, attended with constant delirium, and the optical illusion of *muscæ volitantes*, and presenting altogether such an aggravated form, as is only witnessed in the most confluent kind, uninfluenced and unmitigated by the previous vaccination, unless that the secondary fever was not at all so severe as I expected, from the violence of the first stages of the disease. After a protracted struggle, during which, at times, I considered his life in the utmost danger, he recovered; his face a good deal marked by the disease, but the marks, however, have since become much less visible.

Suspecting that when two of a family, within so short an interval, were attacked with the disease, all the other children

would prove equally susceptible of the variolous infection, I immediately, on the first appearance of the eruption in William, formed the resolution of inoculating the remaining nine, and accordingly, by taking matter from Thomas, the boy first attacked, I inoculated all the rest; following the same mode as is usually practised in vaccination, except making one slight scratch on the arm in place of two, from an apprehension that the inflammation being more severe in small-pox, the two pustules would run into each other, and form a bad sore. I must premise to you, that I, myself, vaccinated those children with matter sent from the Institution in Sackville-street, and that they had the genuine cowpock.

In eight of these the progress of the small-pox inoculation was as follows:—On the second or third day, a small vesicle appeared with the edges red, and somewhat inflamed from the first, presenting pretty nearly the appearance of the spurious cowpock; it was not so circular as the vaccine pustule, and had not the flat top, which I reckon the chief distinctive mark of the latter. The pustule increased in size, and the angry, festered appearance of the edges became more apparent, till the eleventh or twelfth day, when the erysipelatous inflammation, though not quite so vivid and well defined as in cowpock, encircled the pustules. This inflammation, in some of them, went quite round the arm, occupying about half of it; and in one boy of eleven, it fairly surrounded the entire arm from the top of the shoulder to the elbow, in the shape of a slight *erythema*, so that I thought it right to apply a saturnine lotion, which soon subdued it. This inflammation disappeared in all of them in two or three days, leaving a larger sore than in cowpock, which soon became incrusted with a black scab, which continued several days; and in one or two, when it was rubbed off prematurely, exhibited a deep red pit, and on healing, left a deeper eschar than in cowpock. About the fourth or fifth day a slight swelling in the glands of the axilla of the affected arm was perceptible, with considerable pain on pressure, or on moving the arm.

On the sixth or seventh day all the eight suffered a smart febrile attack with some rigors, increased heat, accelerated pulse, pain in the head, limbs, and back, and sickness of the stomach, with prostration of strength, and great depression of spirits; this continued two or three days; but in a lad of seventeen and the boy of eleven, the fever continued for five days so extremely severe, as to confine them to their beds, and I began to repent that I had not let them take their chance, apprehending that this fever would be succeeded by a crowded eruption; however, I had the pleasure to find, that the febrile symptoms gave way without the eruption of a single pustule, excepting a number of minute vesicles which surrounded the inoculated part of the arm. The child in whom the inoculation failed was an infant whom I vaccinated three months before; I repeated the inoculation, however, in the summer of 1836, and he then took it in the form I have now detailed.

As soon as it was known in the town that two of my sons had taken the small-pox, under the circumstances I had stated, and that I inoculated the rest as a measure of precaution, and that other cases of small-pox after vaccination were occurring about the same time, the confidence of many, in the preventive influence of cow-pock, was shaken, and several pressing applications were made to me for variolous inoculation. Three or four grown up young ladies, the daughters of a friend of mine, were particularly urgent; and finding me reluctant, implored of me, even with tears, to grant their request, observing, that if I had not myself lost confidence in vaccination, I would not have inoculated my own children, and adding, that whatever was the consequence of inoculation, they could only blame themselves. Such was their anxiety on the subject, that they even insisted I should use matter taken from my eldest son, though I stated to them that he had the confluent form of the disease, and that I should much prefer waiting till I could obtain matter from a patient under more favourable circumstances; they would admit of no delay, so I in-

oculated them, with some younger brothers and sisters, being in all *ten.*

It being the universally received opinion among medical men, since the time of Jenner, that inoculation with the small-pox virus after genuine cowpock, will produce no constitutional affection, I endeavoured to account for the febrile symptoms that took place in my own eight children, on the principle of idosyncracy of constitution, which neutralized the anti-variolous influence of cowpock. I felt, therefore, some degree of curiosity to ascertain whether the inoculation would be productive of a similar train of constitutional symptoms in the members of this family, and it was with some surprise that I found the result almost exactly similar; the symptoms of pain in the axilla, and the occurrence of fever on the sixth, seventh, or eighth day, proving that the constitution was fully affected; one only of this family resisted the inoculation, a girl of about fifteen, and I shall presently endeavour to explain why it did not succeed with her.

Besides the nineteen now recounted, I inoculated fifty-one more in the course of a few weeks, the majority of them being children of the gentry of the town and neighbourhood, of various ages, from that of five or six to puberty; the fever and other symptoms (except the pain in the axilla, which was sometimes wanting) were the same as already detailed; in the case of one young lady, the fever appeared so early as the fifth day; but on whatever day it appeared, it was generally sufficiently active to confine the patients to the bed, for two days at least, when it gradually subsided, as in my own family, without any decided pustular eruption, except in two instances, in each of which, a gentleman and lady of about 20, somewhat more than 200 perfect small-pox pustules occurred in the face and body. When variolous inoculation was practised previous to the introduction of cowpock, the progress of the punctured vesicle, as well as the pain in the axilla and febrile symptoms, were very nearly similar to those I have now described; and in a great majority of cases, particularly in those who had undergone a preliminary prepara-

tion for inoculation, there occurred no pustular eruption, except the minute pustules which surrounded the areola of the punctured part. The small-pox, therefore, in sixty-eight out of seventy of my cases, was, I almost venture to say, as fully communicated, as if the patients had never been vaccinated. How contrary to the generally received opinion is this, I can only say, that I have faithfully stated the facts as they occurred to myself; let other medical gentlemen fairly try the experiment for themselves.

Soon after my boys were attacked, seven children of a clergyman in the neighbourhood of Dingle were successively seized with small-pox. They had been all previously vaccinated; the complaint, however, was evidently much mitigated, the febrile symptoms being moderate, and the pustules not arriving at the usual size and development as in the regular small-pox, and excepting the duration of the eruption, rather resembling the chicken-pock; and it was somewhat remarkable, that the complaint was more fully formed in an infant whom I vaccinated myself, about two months previously, than in any of the other children, the eldest of whom was about eight or nine.

The next case I was called to, presented a form of the disease, somewhat modified by vaccination, I suppose; it was in a young lady of about twenty; after febrile symptoms, an eruption of minute florid dots appeared, so crowded on the face, as to resemble very much the eruption of measles; they were more distinct on the body, and particularly on the legs, being there very red, but scarcely perceptible to the touch, and quite unlike the pustules of small-pox, as they appear when they first break out. This efflorescent eruption or rash, disappeared in twenty-four hours, and was soon followed by the real small-pox pustules in the distinct form, and the complaint went through its course favourably: this result I attribute to the influence of vaccination, as when the small-pox formerly assumed this measly appearance, it was almost invariably followed by a confluent and fatal eruption. The young lady of the family of ten, in

whom I said the inoculation failed, had after fever some fever, an exactly similar eruption, though not so general, which went off without any variolous pustules; this, I have no doubt, was a modification of small-pox, and as it occurred about a fortnight before I inoculated her, was the cause of her resisting the inoculation.

Another case I think worth mentioning was that of a lady, who, though she had been cut when an infant, was uncertain whether she had taken the cowpock; a young man who assisted at the dispensary vaccinated her, and after three or four days, perceiving very little appearance on the arm, and thinking it had failed, inoculated the other arm with small-pock matter, at the urgent request of the lady; in a day or two, however, the cowpock appeared, and went through its course in a genuine form; the efflorescent circle had scarcely disappeared when the small-pock vesicle on the other arm shewed itself, and progressed with the same constitutional symptoms of pain in the axilla and fever as in the other cases. Six other cases of small-pox, two of them confluent, occurred among the coast guard people. Those cases I did not myself see, as they lived at a distance from Dingle, but their friends came to the Dispensary for medicines for them, and having closely examined them, I have no doubt but all of them had been properly vaccinated.

If it is allowable to mention cases which I did not attend personally, but which I have no doubt were accurately reported, I could advert to an intelligent friend of mine, who had seven children affected successively, and the physician who attended declared the complaint to be small-pox. I could mention another family in the neighbourhood of Tralee, who had five children similarly affected, and a widow lady who had four.

Those cases, with the seven children I visited myself, prove my position, that when the small-pox invades one child among a family of children, the others will pretty certainly take it in their turn, and are further proofs that I was right in having recourse to variolous inoculation in my own family.

In the following summer of 1836, I met with two cases of this kind; the first was a lady of about 26, who was attended, before I saw her, by Dr. Crumpe, of Tralee; for the first three or four days, the fever (which we took to be idiopathic) ran so high, and the pain in the head was so severe, that we ordered her head to be shaved, and cold lotions to be kept constantly applied; this was scarcely commenced, however, when a good crop of variolous pustules broke out, the fever gradually abated, and the complaint went through its course in the mild distinct shape. The next case was of a gentleman of about 20, in whom the eruptive fever was very moderate, the pulse being very little accelerated, but which was followed, notwithstanding, by a confluent eruption, from which he recovered with his face considerably pitted. On minute inquiry, it was ascertained beyond any rational doubt, that both those patients had been properly vaccinated.

Within the last two months, three other cases have come to my knowledge. I visited the mate of a Scotch vessel at Blennerville, about a mile from this town; he had very severe febrile symptoms, and felt so much pain in the back, that he could hardly be persuaded he did not strain it in assisting to unload the vessel; about the fourth day, a regular small-pox eruption appeared, which turned out confluent; how this case terminated, I cannot say, as the ship sailed on her return soon after. This man was positive that he had the cowpock at Greenock, and on examining his arm, the mark of vaccination was very visible. The other cases were those of a young clergyman and his wife. The latter took the small-pox, which she communicated to the husband during his attendance on her; he had the complaint in a severe and confluent form, and was so much marked and altered in his appearance, that a friend, who was long acquainted with him, passed him by without recognizing him.

I did not myself see those two last cases, but I can give you the names of the parties, as well as the name of the physician, who attended them in the small-pox, and there is not the least doubt but that both had the genuine cowpock.

Several of those whom I inoculated had, on my recommendation, first tried re-vaccination; but whether it was that the *dry* matter which, got from cowpock institutions, is frequently apt to fail, or more probably, that having undergone the complaint previously, the susceptibility to a second vaccination is diminished, not one of those thus treated took the cowpock, with the exception of the lady whom I mentioned as having had both complaints in quick succession, but in whom, however, it was doubtful whether the first vaccination had properly succeeded. Upon the whole, setting aside a number of cases of Dispensary patients among the children of the poor, where no regular register of the progress of vaccination was kept by the medical persons, more than fifty cases have come within my own knowledge among the upper classes, most of whom were adults, where the casual small-pox occurred after genuine cowpock. The children who were the subjects of the disease, had it mostly in a mild and mitigated form, evidently from the vaccine influence. Not so, however, those of mature age, in many of whom it exhibits the confluent and malignant form, and leaves an undeniable record of its invasion in the pitted and marked faces of its victims.

Whether this greater severity in adults be the natural character of the disease, or that the protective influence of cowpock is diminished in the course of time, I shall not take upon me to decide. I can see, however, no objection to re-vaccination. Those who are susceptible of it, will have some additional security against variolous infection, but as I have seen very young children, whom I have myself vaccinated, and one infant within two or three months after genuine cowpock, take the casual small-pox, I would earnestly recommend, to grown persons in particular, to depend rather on small pock inoculation, which, as far as my experience goes, will be found most effective and perfectly harmless. Those who have been regularly vaccinated, need not undergo any preliminary preparation for inoculation,

but to render "surety doubly sure," and allay the apprehensions of such as are timid, I can see no objection to placing children and others, particularly such as are of a full habit, on a regimen for a few days, say for a week previous to inoculation, and all that will be necessary will be to abstain from animal food, and take two or three moderate purgatives containing such a proportion of calomel and James's powders, as may be suitable to the age of the patient. Whether persons inoculated as I have proposed, and having no pustular eruption, are capable of communicating the disease by infection, I cannot positively determine; certain I am, however, that not one those whom I inoculated communicated it, and this would be a powerful argument in favour of this certain and undoubted protection against the casual occurrence of this loathsome disease.

That cases of small-pox attacking the same person more than once, have occurred, cannot be doubted. They are extremely rare, however, and I cannot say that I have myself ever seen such a case. No new or unusual complaint occurred in any patient vaccinated by me.

But it may not be out of place, to record a dreadful case that I witnessed at the Dingle Dispensary, of a child of four or five years, who had been inoculated by one of the itinerants; the operation was performed on the outside of the leg, a little below the knee, and in place of the small-pox, an erysipelas of a most malignant character followed, which rapidly extended down to the foot, and up as high as the hip, passed across to the opposite hip, from which it descended to the foot, and ran quickly into mortification, so as to exhibit before the death of the little patient, the lower half of him as black as tar, which made me suspect, that the virus employed was taken from the putrid body of of some one who had died of the disease; for it is well known, that those men sometimes experience extreme difficulty in procuring variolous matter to set the disease a going at first. Similar cases were reported to have occurred in some of the

country villages; this, however, was the only one which I witnessed myself.

You may now, Sir, feel disposed to inquire, whether from these observations I wish that vaccination should be exploded and variolous inoculation substituted and exclusively practised? No such thing; I believe that vaccination affords, generally speaking, a great protection against small-pox, and I do not deny, that even in those cases where it fails, it exerts a salutary influence in mitigating the severity of the latter; and even in confluent cases, seems to render the secondary fever milder. But that its protecting powers have been much exaggerated, or perhaps diminished in the course of time, by constant transmissions from one person to another, without renovating the virus from the original fountain, I have no doubt. Let vaccination then go on and prosper; in the mean time, were any weight attached to my rccommendation, I would earnestly advise those who have had children vaccinated, to submit them to the additional and more certain protection of variolous inoculation, as soon as the small-pox appears in their town or in the vicinity of their residence; and those among my medical brethren who may be disposed to consider this advice uncalled for and unnecessary, I respectfully refer to "Cursory Remarks on Small-pox, as it occurs subsequent to Vaccination," by Dr. Gregory.—*Med. Chir. Trans.* vol. xii. part ii.

BIBLIOGRAPHIC NOTICES.

Elements of Pathological Anatomy, &c. By Samuel D. Gross, M. D., late Professor of General Anatomy, &c., of the Medical Department of Cincinnati College.

It has been the habit with some to sneer at the usefulness of pathological anatomy, and to insist that this part of medicine has lately received more than its due share of attention, to the injury of more important branches. Without denying that some of the many hours spent in minute pathological inquiries might have perhaps been more profitably employed in studying living diseased organs; we yet are among those who think, that for the great advances made in medicine during the last half century, we are greatly indebted to the labours of the pathologists. How superior now is our knowledge of the nature, and consequently of the treatment, of the diseases of the brain and spinal marrow! of the lungs, heart, and great vessels! what improvements have the accurate pathological inquiries of Cooper and others effected in the operations for strangulated hermia! and how great are our obligations to Brodie for his invaluable work on the Joints, where the pathological change is connected with the symptoms, and the rules of treatment placed on rational and sure foundations! Let us not, therefore, forget our obligations, but on the contrary, let us receive with gratitude the fruits of the toil of those working in this laborious department of science. Doctor Samuel Gross informs us, in the preface, with his reasons for publishing his work on Pathological Anatomy.

"Of foreign publications that have found their way to the United States, there are only two, those of the late Dr. Matthew Baillie, of London, and of Professor Andral of Paris. Concerning those productions, which are both highly honourable to their authors, as well as to the nations to which they respectively belong, it need only be remarked that one, besides being entirely out of print, is altogether in arrear of the present condition of pathological anatomy, and that the other, from the introduction of new and perplexing terms, for which there is so extraordinary a fondness on the

part of the French writers, and from a singular want of systematic arrangement, can never subserve the purposes of a text book. To supply these deficiencies, therefore, is the object of the present treatise."

Although, as Dr. Gross diffidently observes, he has had much less extensive opportunities of making necroscopic examinations than many of his European brethren, his position as Professor of Pathological Anatomy in the medical department of the Cincinnati College has yet given him unusual advantages, and induced him to allot a greater than ordinary share of attention to it, and he has formed the nucleus of a museum, which already contains a large number of the most valuable preparations. With a more valuable work on pathology than the two volumes before us, we are not acquainted. With rare judgment, the author has given a most satisfactory summary of the labours of the most celebrated pathologists of the day; rejecting what is useless, he has retained every thing of importance, and has in nearly every article added something useful of his own. He possesses great power of compressing a large amount of information into a small compass; for instance, how much valuable knowledge is contained in the following brief account of one of the pathological conditions of the veins.

"*Dilatation* is most frequently observed in the veins of the testicles, and lower extremities of persons whose employments compel them to stand for a long time in one position. It has also been observed in the superior extremities, and in a few instances I have witnessed it in the superficial veins of the abdomen. Of the deep seated veins, those frequently affected are the subclavian, jugular, azygos, and hemorrhoidal. The vessels in this disease become larger, elongated, knotty, irregular, and tortuous, winding in a serpentine manner underneath the skin; their coats are either of the natural structure, or they are thick and rigid, or thin and expanded, or, finally, they are weak in some places, and hypertrophied in others. When laid open, they are found to be rough and irregularly sacculated, strong bands being sometimes stretched across their interior, which divide the vessel into little cells, filled with coagulated blood. The valves, although they generally retain their normal texture, are sometimes thickened, indurated, displaced, or ruptured. This varicose state of the veins is usually attended by chronic inflammation, and often leads to great and irreparable mischief. In many cases, the vessels are converted into hard, rigid cylinders, or their tunics are invaded by ulceration, followed by perforation and profuse hæmorrhage.

Obliteration of the veins is by no means uncommon, and is almost always the result of inflammation. Sometimes it is caused by the pressure of a tumour, by forcing the sides of the vessel closely in contact, and so converting them into a dense ligamen-

tous cord. The largest veins are sometimes thus obliterate. Albinus, Baillie, Knape, Ponchett, and numerous other writers, have related cases where the great hollow veins themselves were either transformed into hard fibrous cords, or obstructed by coagulating lymph, pus, clotted blood, polypous growths, or morbid deposits. A few years ago, along with Professors Drake and Rives, I examined the body of a man, aged forty, in whom the ascending cava was closed by a plug of plastic lymph, from the second lumbar vertebra as high as the liver. The vessel retained its normal size, and the morbid substance, which was of a pale straw-colour, and of the consistence of semi-concrete albumen, adhered firmly to its inner surface, having evidently been deposited a long time previous to death. A similar substance was found in the portal, and right renal veins, and in several of the smaller veins of the left lung. All the abdominal viscera showed signs of chronic disease, and, during the last two years of his life, the individual suffered at intervals from ascites. In another case, which I saw eighteen months ago, a similar substance was found in the external iliac and femoral veins, together with some of the small vessels of the pelvis. The most prominent symptom here, as far as the veins were concerned, was œdema of the corresponding extremity."—vol. i. p. 295.

We should have been glad to have laid before our readers more lengthened specimens of this useful work. The student will find it a most important one both for reference, and as furnishing him with extensive knowledge with little labour. It is illustrated with good lithographs, and still better woodcuts. Fully satisfied as we are with Dr. Gross's work, and from the want of such a comprehensive compendium of pathology among ourselves, we feel convinced that it will, like Dr. Beck's admirable treatise on Medical Jurisprudence, ere long become European.

Anatomical, Pathological, and Therapeutic Researches on the Yellow Fever of Gibraltar of 1828. By P. Ch. A. Louis. Translated from the Manucripts by G. C. Shattuck, Jun., M.D. Boston, 1839. 8vo. pp. 374.

We cannot better introduce the above work to the notice of our readers than in the words of the author:

"The epidemic yellow fever which prevailed in Gibraltar in 1828, commenced in the middle of the month of August, towards the close of a summer which does not appear to have been remarkable for its temperature, and terminated the 25th of the following December, after a violent hurricane; that is to say, no new case of the disease was authentically ascertained after that time. The French Government, desirous of information on the origin and

mode of propagation of this new epidemic of yellow fever, appointed a commission of physicians, composed of Drs. Chervin, Trousseau, and myself, who should go to Gibraltar, and collect such facts as might lead to the solution of the problem. The commission left Paris the 1st of November, and arrived in Gibraltar the 23rd of the same month, thirty-three days before the termination of the epidemic."

The study and analysis of the facts relating to the yellow fever of Gibraltar, fell to M. Louis's share; the origin and mode of propagation to M. Trousseau. Circumstances prevented the latter gentleman from completing his part of the subject, nor was M. Louis himself able to engage in it, so that this portion of the labours of the commission, so highly important and interesting, is still incomplete.

The following general description will give an idea of the nature of this terrible malady.

"The disease spared neither sex nor age, men and women, young and old, were alike its subjects. Those only were exempt from its influence, who had gone through with the disease in a former epidemic.

"It commenced at different hours of the day, sometimes in the night, sometimes fasting, or soon after eating, usually with an intense headach, accompanied by chills, shivering, pain in the limbs, and soon after pain in the back. A heat, rarely intense, succeeded to the chills, and was sometimes followed by perspiration. At the same time the countenance became red and animated; and in some cases, as it were, swollen. The eyes were red, glistening, suffused, and in many cases the patients complained of a sensation of smarting in them. The thirst was intense, the anorexy complete. It was rare that the patient suffered any pain in the epigastrium at this period.

"The first symptoms, the headach, the pain in the limbs, the anorexy, the thirst, the heat, the redness, and the pain in the eyes, continued, the headach during half the disease, the pains in the limbs a little longer, and the heat, which in many cases was but slightly increased, continued so during nearly the same time.

"The pain at the epigastrium, so rare at the commencement, came on usually fifteen or twenty hours later. It was generally inconsiderable, and very few patients complained of severe or acute pain. With the epigastric pain came the nausea and vomitings, excited by drinks and purgatives in several cases, spontaneous in others. The dejections were frequent, that is, where no laxatives had been administered. The abdomen preserved its form, was supple and indolent, except in the epigastric region. The sleep was inconsiderable, some patients were restless, in some there was a good deal of jactitation during the night. Others, and the smaller number, experienced as early as the third day, a real anxiety, could not remain quiet in any posture, and in some cases there was delirium. But this symptom did not usually come on till the last

day of life, and for this reason it is to be considered rather as belonging to the agony than to the disease. Otherwise, with few exceptions, there was neither prostration nor stupor. The pulse was moderately accelerated, regular, generally bearing relation to the degree of heat, which was almost always slight, as I have before said. The skin of the thorax was injected in some cases. This redness, and that of the eyes, diminished towards the middle period of the disease, or a little later, and new symptoms appeared. To the injection of the integuments of the chest there succeeded a slight yellow tint of that part, and the eyes were of the same colour. When this colour appeared thirty-six or forty-eight hours before death, it became rapidly brighter, so as to be of some intensity at the time of the fatal termination. In other cases where it came on only just before death, it was slight at the autopsy, and commonly limited to the trunk. At about the same period, or a little later, the matter vomited, and the discharges from the bowels, which up to that time had presented nothing remarkable, took on a certain character which they have not in the course of the acute diseases of Paris. The dejections were blackish or black, and the matter vomited, from being of a yellow colour, became brown or black. At the commencement of this change of colour, the vomit was of a liquid matter, more or less greyish, mixed with a greater or less quantity of mucus, in which were to be seen blackish parcels, like soot. At this period of the disease, the uncomfortable feelings and the anxiety continued during different lengths of time, and in different degrees, the strength diminished, the temperature fell, so that the limbs were cold before the agony ; in a certain number of cases there was a suppression of the urine. Sometimes also we observed a sort of remission, an apparent amelioration of the symptoms, and death took place when it would least have been expected, had not experience taught us to distrust his deceitful remission. In some subjects the violence of the headach, that of the pains of the limbs, the marked febrile symptoms, the numerous vomitings, the uncomfortable feelings, the anxiety, the bright redness of the eyes, gave to the disease a truly serious aspect; whilst in others the mildness of the fever and of the pains wherever seated, the absence of agitation and delirium, the slight diminution of the strength, impressed on the disease a character of mildness, calculated to deceive at once the patients, their attendants, and the physician. It is under this form of the disease that patients died without taking to their beds, on foot, as it was expressed by their friends. Thus Dr. Mathias, who died after an illness of four or five days, experienced no other symptoms but severe pains in the calves of the legs and a suppression of urine. He had no nausea, he did not vomit. His mind was perfectly clear during the whole course of the disease, he noticed the continuance of the suppression of urine, dictated three or four letters to a friend, begged him to write rapidly the last, so that he might sign it, then devoted a little time to an affectionate intercourse with this friend, and soon after, unable to speak, he thanked the friend by a sign, and in a quarter of an hour he was dead.

"This kind of latent condition of the yellow fever does not distinguish it from the acute diseases of Paris, which also are often obscure, and their symptoms mild. But it is remarkable on account of the rapid progress of the disease, usually fatal from the fourth to the sixth day. And this latent form reminds us at once of certain facts of poisoning by arsenic, in instances of individuals who have retained their clearness and calmness of mind from the moment of swallowing the poison until their death.

"I add, that the severity of the symptoms does not correspond always with that of the lesions. Of these last, one only was constant, the specific alteration of the liver. The inflammatory state of the mucous membrane of the stomach comes next in frequency, and sometimes explains in a manner sufficiently satisfactory the symptoms that had been observed."

He then considers each symptom *seriatim*, a task in which, in a notice of this kind, it would be inexpedient to follow him; the mortality on an average was one in six and a-half.

"This mortality was not the same in the two sexes, nor at all ages of life; this difference, generally believed in by the people of Gibraltar, is shewn clearly from the documents which have been collected by the commission. From these documents we find, that of two hundred and fifty children, short histories of whom were taken, fifteen only, that is, a seventh part, died, whilst the mortality among the men was one in four and a-half, and among the women, one in five and a-half. This difference in favour of childhood is very great, and is owing, in part, to that of the constitution and the strength, for there was a difference also in favour of the women, whose constitutions and strength more nearly resembled those of children.

"Not only was the disease less severe in woman than in man, much less in childhood than in adult age, but the same symptoms have not the same value for the prognosis at all periods of life; thus the black vomit, which in men was the almost certain harbinger of death, took place in a great many children who recovered."

The mortality, however, was not the same in the different epidemics, nor did children always escape so well.

After having given, in his usual minute and clear style, a description of the effects of the disease on all the viscera, in twenty-five dissections of subjects, twenty-three of whom had died of yellow fever; he comes to the question, what is the essential anatomical character of the yellow fever of Gibraltar, of 1828? Now, as the red and black matter of the stomach and intestines was not found in all the cases, while the alteration of the liver was found to be nearly the same in all, he concludes the last to be the anatomical peculiarity of the disease. The change of the liver, to which he alludes, is the alteration in its colour, which offered the following varieties of yellow.

"Sometimes it was of the colour of fresh butter, sometimes of a straw yellow, a clear coffee and milk colour, sometimes of a gum yellow, sometimes of an orange colour.

"This discoloration was not the same through the whole extent of the liver, more marked in the left than in the right lobe; it was also more uniform. In cases where the colour was uniform in the left lobe, there was in the right lobe, a mixture of gum yellow, orange, or red points, larger or smaller, or else we found in the right lobe, a rose tint, which did not exist in the left lobe."

The consistence of the liver varied, and presented no uniform peculiarity.

M. Louis properly observes, that the more accurate the diagnosis of any disease, the more likely is its treatment to be effectual; but besides this important precept, in a disease like the present, where the question, of how far isolation, or a removal of those affected from the place where their contact with others might further tend to spread the infection, comes to be considered, it is a matter of the most vital importance, that the disease should be early recognized, and that precautionary measures should be enforced as soon as possible. In severe cases, the diagnosis can present no real difficulties during life, the rapid course of the disease, the black vomit and dejections, the yellowness, and extremely uncomfortable feelings being peculiar, and even where the disease was not quite so well marked, but fatal, the presence of a greater or less quantity of black matter in the stomach and intestines, and the specific alteration of the liver, will remove all doubts.

In severe cases, where the patients recovered, and where there was no yellowness, but still more where the disease was very mild, the diagnosis is often doubtful.

By a commission, including M. Louis, his confreres, some English surgeons, and several Spanish practitioners, the following important fact was put beyond all dispute, viz. that one attack of yellow fever prevents a person from ever again having the same disease, quite as effectively, or even more so, than any of the exanthemata. During, therefore, the prevalence of the epidemic, the care of the sick should be intrusted to those who formerly had the disease; those who suffered formerly from it may remain perfectly safe, in a city where it is prevailing epidemically.

Another question, the decision of which materially affects the interest and value of M. Louis's work is, whether the epidemic yellow fever of Gibraltar of 1828, is the same as the yellow fever of the West Indies, America, &c.? M. Louis says, that all the general facts, resulting from his analysis, may not be found in other epidemics, but that the general points of re-

semblance will probably be so numerous, that the usefulness of his work will not be denied.

The translator in a note mentions, that M. Rufz, a physician for some years established at Martinique, has recently informed M. Louis, that the same lesion, viz. that of the liver, observed at Gibraltar, has been found the only constant and uniform lesion of the yellow fever at Martinique; but still we think this point remains to be decided. M. Louis has ascertained, that besides epidemic visitations of the disease, the yellow fever exists in Gibraltar sporadically.

Valuable as M. Louis's researches are, and excellent as are his descriptions of symptoms and pathological changes, the present, in common with his other works, is nearly quite valueless with respect to the important subject of treatment. In the large proportion of the cases examined by him, the pathological state of the organs was not such as satisfactorily to account for the death, nor have they furnished any useful indications for treatment; the most remarkable feature, viz. the change in the liver, must still remain a subject of speculation, its nature and its remedy are equally unknown. M. Louis considers it, however, to be an ascertained fact, that no dependance is to be placed on mercurial preparations; he conceives moderate bleeding at the commencement of the disease, repeated or not, according to the degree of febrile excitement, to be indicated; he recommends emollient enemata, fomentations, and the use of astringents against the gastro-intestinal hemorrhage. But he allows, that as the nature of the deranging cause is still unknown, we have still to look for a remedy for the disease, and that we are not to reject any means, however apparently empirical.

We cannot conclude without awarding our full meed of praise to the translator; he has ably done his task. In America, a class of young physicians is rising up, from whose exertions the progress of medicine in that country must receive an extraordinary impulse. Educated under the great masters of the art in Paris, diligent cultivators of the opportunities of instruction which that capital affords, these young men return home, enriched with scientific knowledge and tastes; their native good sense, and a few years' practice, soon add that practical information, which the French school fails to afford. of this class is Doctor Shattuck, a favourite pupil of Louis, evinced by his intrusting to him his yet unpublished manuscripts for translation. A diligent follower of the numerical method, an enthusiastic lover of his profession, we look forward with the confident expectation, that this talented young physician will not rest satisfied with translating the labours of others,

but that he will, ere long, gratify us with some original contribution of his own.

The Provincial Medical and Surgical Journal. Edited by Dr. Hennis Greene and Dr. Streeten.

The second number of this Journal is full of interesting matter, and some of the original articles would do credit to any of the larger medical periodicals. We allude particularly to those by Dr. Lynch, Dr. Greene, (on Hypertrophy of the Brain,) and Dr. Bushnan's communication on the Use of Veratria Ointment to the Sacrum, in Dysmenorrhœa.

Our readers will be glad to receive Dr. Lynch's analysis of the celebrated trial of Madame Lafarge.

[" The proceedings at the trial of Madame Lafarge, for the murder of her husband, have excited an intense degree of interest, in consequence of the rank and sex of the accused, as well as the enormity of the crime laid to her charge, and the medical evidence has been contradictory in the extreme. We, therefore, feel pleasure in being able to lay before our readers the following valuable analysis of the evidence, but especially the medical testimony, accompanied by a few remarks from the pen of a gentlemen who is peculiarly qualified for this delicate and difficult task. We believe, indeed, that this analysis and these observations will prove acceptable to our professional brethren, for many useful hints may be derived from a careful examination of the reports of this cause; reports contained in several successive numbers of newspapers which many medical men have it not in their power conveniently to consult.—Eds.]

" In order to attain quickly a clear notion of this perplexing case, it is requisite to bear in mind that three different groups of analysts gave in as many distinct reports. 1st, the medical men of Brives, Bourdon, Tournadour, and Lafosse, with Lespinatz, of Lubersac, and Massenat, of Paris ; 2nd, Messrs. Dupuytren and Dubois, of Limoges ; 3rd, Messrs. Orfila, Bussey, and Olivier d'Angers. It should also be remembered that Madame Lafarge, the mother, usually resided with her daughter, Mad. Buffieres.

" We shall first relate the chemical evidence, and, reversing the order in which the reports were made, begin by succinctly describing the experiments and inferences communicated by M. Orfila; for these afford the strongest proof of a crime having been committed.

" FIRST EXPERIMENT.

" One quarter of the stomach, one half of the liquids contained in the stomach, and some liquid which had been vomited, having been returned by Messrs. Dupuytren and Dubois (who had not

used them in their experiments,) were mixed together and carbonized by means of nitric acid, in the manner suggested for the first time by M. Orfila ;* the carbonized mass was boiled with distilled water, the water was filtered, and the filtered fluid being introduced into Marsh's apparatus, yielded an inconsiderable portion of metallic arsenic.

"The mass designated in the indictment (*procès verbaux*) as 'the organs of the thorax and abdomen, the liver, part of the heart, and brain,' which we, for brevity sake, shall call the visceral mass, was now boiled for some hours in distilled water, and the decoction filtered so as to separate the undissolved portion from that which had been dissolved and had passed through the filter. The filtered fluid and the undissolved substance were then operated upon separately.

"SECOND EXPERIMENT.

"The fluid was reduced by evaporation nearly to dry matter; this matter was carbonized by means of nitric acid, and boiled with distilled water, which, being exposed to Marsh's apparatus, yielded arsenical crusts.

"THIRD EXPERIMENT.

"The undissolved portion was burned for seven hours with nitrate of potass, the macerated mass was treated by boiling in distilled water, and the water, being filtered, was submitted to Marsh's apparatus, when a remarkable quantity of arsenic was obtained, amounting to twelve times that procured by the preceding experiments.

"Orfila and his associates did not discover arsenic in two pounds of muscular flesh taken from the thigh, in the winding-sheet, or in the earth surrounding the coffin, and concluded that the arsenic detected by them was not the portion naturally existing† in the human body, because this portion is to be found only in the bones. They, moreover, showed clearly that the metallic crusts were really arsenic.

"This report, taken in connexion with the symptoms observed during the illness of M. Lafarge, will, we think, convince the most cautious medical jurist that the unfortunate man must have been poisoned by arsenic; nor can we suppose it will be of any avail

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* Mémoire sur un nouveau procédé pour constater facilement dans nos organs la présence d'une préparation arsénicale, qui avait été absorbé. Ann. d'Hygiène, &c. vol. xxii. p. 431.

† See Mèmoire sur l'arsenic naturellement conténu dans le corps de l'homme, lu á l'Académie Royale de Médecine, le 24 Sept. 1839. In this little essay, M. Orfila establishes—1st, That arsenic exists in "infinitely small" quantity in the bones of man and several of the mammalia ; 2nd, That it cannot be detected in the bones of man by the ordinary mode of analysis ; 3rd, That it can be readily extracted by Orfila's plan of carbonizing. M. Orfila's inferences may be depended upon, as many of his experiments were performed on *large quantities* of matter (8, 10, or 15 pounds.

to call in the aid of M. Raspail or others, to ascertain whether the arsenic could have been that naturally existing in the human frame, for even in the bones (and it can scarcely be doubted that it is confined to the osseous structure) that portion of arsenic exists in infinitely small quantity, and is separated from them with difficulty by the ordinary chemical agents, whilst experiment, No. 3, revealed a considerable quantity of arsenic. The subject is, however, deserving of investigation, if the opinion of M. Couerbe, that arsenic exists in the human body during putrefaction, originated from his having observed an evolution of arseniuretted hydrogen gas, for this would tend to show that, during the putrefactive process, the arsenic of the bones may be acted upon in a manner we do not as yet understand, and conveyed into tissues which do not naturally contain it. In October, 1838, Couerbe suggested to Lesueur, Ollivier d'Angers, and Orfila, the suspicion which led to the discovery by the latter of arsenic in the bones of man, &c.

"It is worthy of remark, that water, boiled for *several hours* with the visceral mass, dissolved a small portion only of the arsenic; but that the part of the visceral mass, which was not taken up by the water, (when treated after the method of Orfila,) yielded twelve times the quantity extracted by the first two experiments. Was the portion of arsenic which the water did not dissolve retained by the animal matter, or sesquioxide of iron, used as an antidote, or by both? This question suggests the performance of experiments to determine a point, which, we believe, has not as yet been investigated;* but whatever may be the result of an inquiry instituted with the view of showing why the arsenic was not dissolved by protracted boiling, it must be confessed that the experiments detailed in the report refute the objections urged by Devergie against Orfila's plans of incineration with nitrate of potass, and carbonization by means of nitric acid, and place it beyond question, that, in some cases at all events, *boiling for one hour or less, as directed by Devergie, Christison, and others, is altogether insufficient to dissolve the arsenic, which may thus remain undiscovered even by skilful chemists.*

"It should not pass unnoticed, that the searching analysis of M. Orfila detected in the stomach but an inconsiderable proportion of arsenic, whilst at least twelve times this quantity was procured from the visceral mass; we believe this increased proportion proceeded principally from the intestines, and consider the fact of great value, *serving, as it does, to warn us against the too common error of confining the analysis to the stomach and its contents.*

"The commission, composed of Messrs. Dubois and Dupuytren, concluded that arsenic did not exist in the body of M. Lafarge, but found it in the *lait-de-poule,* gum-water, toast-water, and powdered gum. Dubois and Dupuytren experimented with a full

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* The experiments published by Dr. Christison many years ago, together with the recent experiments of Dr. Maclagan, go far to prove that the arsenic was retained by the oxide.

knowledge of the principles laid down by the best authors, having employed Orfila's method, and having also proceeded by boiling the suspected animal matter in distilled water, throwing down a precipitate by sulphuretted hydrogen gas, and reducing this sulphuret. Their opinion regarding the existence of arsenic in the powdered gum and drinks may be relied upon, being founded on the extraction of metallic crusts from these substances, and their inability to find arsenic in the body can be satisfactorily explained by adopting the opinion of Orfila, that their want of success depended upon their having employed in their operations insufficient quantities of animal matter, and upon their inexperience in the use of Marsh's apparatus, *which in unpractised hands may fail to separate the metal from fluids containing it.*

"No weight can be attached to the report of the Brives Commission, the members of which evinced the grossest ignorance of truths known to the merest tyro in legal medicine, whilst, regardless of the serious consequences which might ensue from their deficiency, they communicated the results of their imperfect or mismanaged experiments with more than the confidence of an Orfila, or a Christison! M. Orfila, indeed, in his letter to M. Paillet, justly rebukes them for their positive assertion, that arsenic must have been present, because sulphuretted hydrogen had thrown down a yellow precipitate soluble in ammonia; and mentions that an analyst had, some years ago, declared a precipitate, exhibiting these characters, and obtained by the same steps, to be arsenic, although it was really formed by an animal matter contained in the bile.* We may add, that sulphuretted hydrogen throws down a yellow precipitate from the bichloride of tin, and this precipitate is soluble in ammonia; the solution may certainly be distinguished by retaining a yellow shade; but inexperienced men, operating on a weak solution, would probably overlook this circumstance.

"The exposure of Messrs. Bardon, Tournadour, Lafosse, &c. will, it is to be hoped, for the future deter medical men from undertaking medico-legal investigations which they are incapable of properly conducting. It too often happens in our own country, as well as in France, that medical witnesses, unskilled in analysis, are induced by an unwillingness to acknowledge ignorance, or are tempted, by the very inadequate fee allowed by law, to enter upon the chemical inquiries demanding the utmost accuracy; for upon them depend the due administration of justice, the public safety, or perhaps the life of an individual wrongfully accused. The trial of Mad. Lafarge proves that such a course is as much opposed to the interests of the parties who pursue it, as it is to the laws of honour and to morality.

"Having now discussed at some length the evidence of the

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* Chevallier has twice seen the precipitate; and in his memoir on arsenic naturally existing in the human body, M. Orfila relates an experiment, in the course of which he obtained this substance, by boiling the liver of a person who had not taken arsenic, and passing S.H. through the filtered solution.

scientific men, we shall proceed to review and canvass the testimony of the other witnesses.

"The following is a summary of the principal non-medical testimony brought forward against Mad. Lafarge :—it was deposed, that she had repented of her marriage, and declared her hatred of her husband; that she had several times during his illness, and previously, despatched servants to the neighbouring villages for arsenic; that she had not seemed to regret his illness or death; that arsenic had been found in his stomach and drinks; that poison had been detected in the powdered gum whcih Mad. Lafarge kept in a little box; that Mad. Le Brun had seen the prisoner put a white powder into the *lait-de-poule;* that arsenic had been found in a chest of drawers belonging to Mad. Lafarge; that her waiting-maid, Clementine, had assisted in the burial of the arsenic, real or supposed; that Alfred, the valet and friend of Clementine, had betrayed coufusion, and threatened to drown himself when questioned by Faugeras regarding arsenic; that the prisoner had asked questions as to the period of mourning; that she had seemed anxious to receive her letters after having sent the box to Paris; that her husband had been affected with pain of the stomach, or vomiting, after eating a portion of these cakes; that he had alluded in his letter to *one* "delicious cake" which the prisoner had requested him to eat, and two little cakes which his mother had sent him; that the waiter in the hotel at Paris (who opened the box) had seen but one cake; that the prisoner had requested her mother-in-law to withdraw from attendance upon her son; and that Marie Mathieu, the cook, had given Clementine sugar and an egg to make a *lait-de-poule.*

"On the other hand, the succeeding facts and arguments may be urged in favour of the accused :—that it is not surprising she should have been angry and discontented on finding she had been persuaded to marry by false representations of the luxury and comforts prepared for her; that it had been proved that Mons. Lafarge had practised the most premeditated and heartless deception upon his former wife and her relatives; that the prisoner had been reconciled to her husband for some time; that it is not strange a lady of refined manners and elegant accomplishments should have been desirous of destroying the rats which rendered a residence in the house almost intolerable; that M. Lafarge himself had sent for arsenic in the height of his illness, when no trifling annoyance would have withdrawn his attention from his own sufferings; that arsenic had been so often procured to destroy vermin, that packets of it must have been on various occasions within the reach of other inmates of the house; that the prisoner had shed tears when she perceived that her husband's mind had been filled with suspicions of her, a circumstance proved by M. F. Fleigniat, who acknowledged he was hostile to the prisoner at the time he had observed it; that it is improbable a guilty woman would have *openly* made inquiry as to the period of mourning, and thus direct attention to her crime; that a guilty person would not, like the prisoner, have, without the slightest hesitation, given up for the purposes of justice

the poisoned gum-powder, when it would have been so easy to scatter to the winds this evidence of guilt; that Mad. Lafarge had expressed the greatest indignation when the suspicions of her guilt were communicated to her, and had swallowed some of the poisoned gum-powder, which she would have hardly done had she known it to have been poisoned; that she constantly mixed gum-powder with her own drinks, and seemed to have a high opinion of its virtues; that Mad. Lafarge evinced upon the trial the possession of good sense and great presence of mind, a circumstance tending to prove her innocence, for if guilty, so intelligent a woman would not have acted (as she did on several occasions) in a way calculated to insure her conviction; that the prosecutors had failed to show the impossibility of the arsenic having been introduced into the gum-powder without the prisoner's knowledge; that the evidence of Mlle. Le Brun was given throughout in an incoherent manner; that the little pot of arsenic was found in a drawer which lay constantly unlocked, a place which would not have been selected by the prisoner, (supposing her to be guilty,) for she might have put it into any of the other drawers of the same piece of furniture, which were always locked, and the keys of which were never out of her possession; that it is highly improbable a substitution of the cakes by the prisoner took place, because several persons were present during the packing of the box, and some of these persons were inquisitive, and, according to their own acknowledgment, observant of the mode of packing; that the prisoner had desired her sister (to whom she was warmly attached) should partake of the cake or cakes; that Clementine gave her evidence in a clear and unembarrassed manner, and deposed that her mistress knew nothing of the burial of the supposed arsenic; that the prisoner had never betrayed a malevolent or cruel disposition; that she had not requested her mother-in-law to withdraw until she had been several days in attendance upon her son; that the box was fastened with hooks and cords when it left Glandier, but was nailed when it reached Paris, a circumstance tending to prove the occurrence of substitution, but not by the prisoner; that the letter of the deceased was not sufficiently definite and clear to warrant a conclusion that his wife had requested him to eat, not the cakes made by his mother, but one substituted by herself; that Barbier's suspicions had been expressed at so early a period, and upon such slight grounds, as rather to inculpate himself or others than the prisoner; that Faugeras had been a servant of the Buffieres family; that Mad. Lafarge had permitted her husband to raise money upon the security of property which she had a right to reserve for her own use solely; that she had not hesitated for a moment to guarrantee to M. Roque, banker, of Brives, a debt due by him to her husband, and that this occurrence took place on the day of Lafarge's death; that the *repas sympathique* should not excite suspicion against the prisoner, first, because such manifestations of sentiment are usual in France; and secondly, because had she wished to poison her husband, she would not have adopted a course so calculated to indicate her guilt, but would have awaited the return of M. Lafarge,

when she might secretly have mixed arsenic with his food or drinks, and have succeeded, perhaps, in fixing the charge upon some other person ; and lastly, that all the most important testimony against the accused had proceeded from witnesses whose evidence should be received with the utmost caution ; for instance, it appeared from Barbier's own evidence, that he had been an accomplice of the deceased in preparing and passing forged bills of exchange ; 2nd. A member of the Buffieres family had acknowledged that this family had a pecuniary interest in the conviction of the prisoner ; 3rd. The evidence of M. Chauveron, and the confidential intercourse proved to have subsisted during his present and former marriage, between M. Lafarge and his mother, suggest a suspicion that the latter was not ignorant of her son's transactions in bills ; 4th. Even if she be considered ignorant of her son's discreditable conduct, it should be remembered that she resided permanently with her daughter, Mad. Buffieres, and probably, her feelings and interests were identified with those of the Buffieres family.

" That M. Lafarge perished from the effects of arsenic cannot be questioned, but, after having deliberately weighed the arguments for and against conviction, we do not hesitate to say, that the evidence advanced against the prisoner is not, by any means, sufficiently strong to warrant a verdict of guilty. We beg it, however, to be understood, that, in giving this opinion, we do not mean to assert positively that the crime has not been committed by Mad. Lafarge.

" We cannot dismiss this deeply interesting cause, without denouncing the system, permitted by the French laws, of subjecting a prisoner during his trial to repeated cross-examinations. What can be more likely to deprive an innocent person of his self-possession, and lead him into mistakes and contradictions which may induce a belief of his guilt ? The accused should be deemed innocent until a verdict of guilty has been returned by the jury, and it is barbarous and unjust to make reiterated attempts to confuse them, and extract answers favourable to conviction, at a time when shame, anxiety, and perplexing interrogatories have temporarily almost deprived them of reason. The French would do well to alter a code which allows of so much unfairness and cruelty, and substitute the equitable, considerate, and generous principles of our criminal jurisprudence, which forbid such systematic persecution. Mad. Lafarge has been compelled to submit daily, during a trial of a fortnight's duration, to the repeated brow-beating of the advocate general, the jurors, and (*proh pudor !*) the judge ! Really, a French trial may not inaptly be compared to a French fox-hunt, or a Spanish bull-bait, in which the animal pursued (or rather worried) are allowed no *chance* of escape ! Mad. Lafarge has displayed great firmness of mind throughout this long inquiry, but her strength has given way, and she has been brought to the verge of the grave ; nor is this astonishing, for the strongest man could hardly bear up against such continued torture. M. Paillet, her advocate, had indeed good reason to exclaim, " you will have two corpses instead of one.

On the Cure of Squinting by the Division of one of the straight Muscles of the Eye. By Charles W. G. Guthrie, Jun.

This little treatise, which is published under the form of a Report of the Royal Westminster Ophthalmic Hospital, reflects considerable credit on the author. After some general remarks on strabismus, Mr. Guthrie proceeds to describe the anatomy of the muscles moving the eye-ball, and to explain their action.

In speaking of the action of the oblique muscles, we think that the author has spoken too positively on the action of these muscles in altering the direction of the eye-ball. We are of opinion, that during consciousness these must exert very little action in this way; and agree with Winslow, that their proper action is to draw the eye-ball forward, when retracted by the combined action of the four recti, and that to effect this their oblique direction is rendered necessary by the obliquity of the orbit itself. Mr. Guthrie, however, it must be observed, mentions this action of the oblique muscles, and calls them the antagonists of the recti.

There is one circumstance, however, connected with the action of the inferior oblique, to which Mr. G. does not allude, viz. the combination of action that exists between this muscle and the orbicularis palpebrarum, by which the cornea is effectually kept clean, and which shews, that the inferior oblique, if not an involuntary muscle, as Sir C. Bell supposed, is at least a mixed one; but we could not expect in this treatise, a complete exposition of the action of the muscles of the orbit. But the most interesting part of the paper to the general reader, is, the directions for the performance of the operation for dividing the internal rectus, and which we here transcribe:

"When the patient is an adult he may be placed in a high-backed chair with the head reclined. An assistant raises the upper lid in the gentlest manner, with the ordinary silver elevator used for the same purpose in cases of soft cataract in children, holding it with one hand nearly perpendicularly to the forehead, and desiring the patient to turn the eye *outwards* in a case of squinting *inwards*, fixes the strong double hook with the other hand into the tunica albuginea, through the conjunctival membrane a little distance from the cornea, in the middle line of the eye, or what is pedantically called its equator. The points of the hook are short that they may not enter, or scarcely enter, the sclerotic coat, but they are long enough to pierce the tunica albuginea, for if they only penetrate the conjunctival membrane, this slips, and they raise it from the ball and cause its elevation near the cornea, which delays the cure. The assistant must also take care that the elevator duly raises the lid and gently confines it against the edge of the orbit in such manner that it may not slip, nor allow the upper conjunctive fold or part of the internal portion of the lid to bulge out below it,

which will be apt to occur unless it is carefully prevented, by holding the elevator in the manner directed. On the right eye the elevator is to be held in the left hand, the hook with the right, and *vice versa*. The operator (or an assistant) having depressed the under eyelid with the fore or second finger of the left hand, directs the assistant to draw the eyeball gently outwards with the hook, until the semilunar fold of the conjunctival membrane begins to yield to the traction, when it should be held perfectly steady on the middle line, the centre of the pupil being directly under the shaft of the hook. He then makes an incision nearly equidistant from the hook, and the edge of the semilunar fold, through the conjunctival and the cellular membrane which may intervene between it and the tendon of the rectus muscle, directly upwards and downwards and inwards towards the orbit. Some surgeons use a small straight knife for this purpose, some a pair of scissors, in which case the conjunctival membrane may be raised by a pair of eye forceps at the semilunar valve, and the fold thus formed between it and the hook divided, but I generally cut through this part at once with a small curved knife, which is introduced under the conjunctiva, from below the line of the hook, the point being brought out upwards through the membrane, or with scissors convex on the lower edge, and cutting sharply up to the points which are blunt. The incision is to be enlarged if necessary to at least $\frac{3}{8}$ths of an inch in length, which exposes the tendon of the muscle going to be implanted into the outer or sclerotic coat, and which is made more distinct by the point of the knife or scissors whichever are used, or by the blunt end of the small, flat, curved and slightly grooved director, for which the knife is to be exchanged, and any blood which flows is to be taken up with a small piece of sponge. If the incision is made too close to the semilunar valve, the subjacent cellular membrane frequently becomes infiltrated with blood, and prevents the muscle from being seen, which does not occur when the incision is made at a greater distance from it; but this need not delay the operation. The curved director is now to be introduced by a gentle steady motion beneath the tendon, carrying it inwards rather deeply through the cellular and fatty membranes, so as to be passed under the muscular, as well as the tendinous part, which causes the eye to roll a little INWARDS: and which should not be prevented by holding the hook too firmly. The point is then to be raised by depressing the handle, when it will appear at the upper part of the incision, having the muscle on its grooved surface; and this elevation of the tendinous attachment of the muscle turns the eyeball OUTWARDS, so that the hook is, in fact, no longer necessary, and may be dispensed with after the first incision is made through the conjunctival membrane: and in very determined persons it may be dispensed with altogether. The director being now held in the left hand over the lower eyelid, the curved knife is to be run along the slightly marked groove of the director, and the muscle becoming tendinous is divided."

Mr. Guthrie speaks highly of the success which attends this operation, and we would recommend the perusal of his little work to those interested in this subject.

SCIENTIFIC INTELLIGENCE.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

SESSION 1840.

Nineteenth Meeting, April 11, 1840.

Mr. Colles in the Chair.

1. *Morbus Coxæ.*—Mr. Ferrall said he wished to present a specimen of disease of the hip joint, which exhibited some characters not uninteresting. The patient, a boy about eight years of age, was admitted into St. Vincent's Hospital, the disease being at that period of twelve months' standing. At that time the most prominent features of the case were the presence of a large swelling involving nearly the whole limb, particularly the upper portion, accompanied by a distinct sense of fluctuation, which was freely communicated from one part of the thigh to the other; there was also a tumour of considerable size on the dorsum of the ilium. At first it was supposed that the tumour might by possibility be connected with disease of the spine, but this idea was abandoned on more accurate examination. The position of the patient while standing was this: the pelvis on the diseased side drooped, and the foot was pointed, the toes resting on the ground, and the heel elevated. The boy was of a bad constitution, and laboured under other diseases. He had enlargement of the liver, chronic diarrhœa, and ulceration of the bowels, under which he ultimately sunk. Mr. Ferrall said he should observe, that the shortening of the limb was very trifling, being not more than half an inch, and that it enjoyed a greater degree of mobility than he had ever observed in the advanced stage of morbus coxæ; it could be freely moved in every direction, and with very little pain to the patient. On dissection, the following state of parts was observed. The head of the bone was destroyed, and the caries had also engaged the acetabulum; the amount of destruction in the head being about as much as would account for the shortening. It lay in the acetabulum, which was not remarkably deep, but was carious throughout its whole extent. The capsular ligament was perfect, except at its

inferior part, where there was an opening by which it communicated with the immense abscess at the upper part of the limb. The head of the bone had separated from the shaft, and the slightest degree of extension was sufficient to detach them. In fact the femur presented the appearance which had been so well described by Mr. Carlile during the last session, except that the separation was not so complete, for in his case the head of the bone had been not only detached, but also thrown off through an opening in the integuments. In Mr. Ferrall's case the head of the bone, although separated from the shaft, was still kept in connexion with it by slips of synovial membrane, which passed from one portion to the other. Mr. Ferrall observed that the case was interesting; first, as presenting some difference compared with the usual position of the limb in morbus coxæ. Sir P. Brodie has observed that in some few cases the patient rests on the toe and not on the heel; in the majority of cases it has been remarked that the pelvis is higher on the diseased than on the sound side. In Mr. Ferrall's case an opposite state prevailed; the pelvis being lower on the diseased side. The next point was the remarkable separation of the head of the bone and the preparations for throwing it off, if recovery had been possible from other conditions of the system. (*Museum, St. Vincent's Hospital.*)

2. *Pericarditis with Pleuritis and Pneumonia.*—Dr. Greene presented a specimen of pericarditis taken from the body of a young person about eleven years of age. About fourteen days previously to his death he was attacked with nausea, vomiting, and palpitations, but had no pain in the heart. On admission into hospital the action of the heart was found to be violent, and extending over a very considerable space, the pulse jerking, hard, and incompressible; but he did not complain of any pain, until closely questioned, when he referred it to the cartilages of the fifth and sixth ribs at their junction with the sternum on the right side. On examination a double fremissement was discovered over the base of the heart; it was accompanied by a double soufflet. In Dr. Greene's case there was a double frottement, distinct, but not very loud, which might be accounted for by the length of time the disease had been going on, and the amount of adhesion between the heart and pericardium. With respect to frottement, Dr. Greene said he looked upon it as a very valuable sign. Dr. Stokes says, that it can be heard at a considerable distance, where there is hypertrophy; this however was not the case in the instance alluded to by Dr. Greene, but he thought that solidification of the lung contributed to render the sound more distinct. With respect to the double soufflet, it continued long after the frottement had ceased, and could be heard even at a distance from the heart. This led Dr. Greene to conclude, that there was some internal affection of the heart, most probably some disease of the valves. On examination, he found this to be the case. There was disease of the auriculo-ventricular valves on the right side, and also of the aortic valves. Dr. Greene observed in conclusion, that he thought it

would be extremely important to determine whether bruit de soufflet existed in simple inflammation of the pericardial layer, or whether it is not partly attributable to some simultaneous affection of the internal membrane lining the cavity of the heart and its valves. Whether the presence of an effusion of lymph on the external surface of the heart could produce bruit de soufflet, Dr. Greene could not exactly say; but he thought that an affection of the lining membrane of the heart would produce it. There was another point in the investigation of which he had been engaged, but without having arrived at any satisfactory conclusion, viz., to ascertain whether the sound of friction depends on deposition of lymph on the pericardium, or on the corresponding surface of the pleura. Reasoning from analogy, he would be inclined to think, that where the to-and-fro sound depended on pleuritis, it would be double, like that of respiration, and he had verified this in a case which had been recently under treatment at the Richmond Hospital. Hitherto, however, he had not succeeded in meeting with a case of simple pericarditis; but he knew that there were such, and gentlemen who had the opportunity would be able to determine the exact character of the to-and-fro sound in pure pericarditis as compared with pericarditis complicated with pleuritis. With respect to the case he had brought before the meeting, it was one of pericarditis with pleuritis, pneumonia, and solidification of the lung. The patient had not been subject to rheumatism.

3. *Cancer of the Lung with Empyema.*—Dr. Stokes begged to bring before the notice of the Society, a case of cancerous degeneration of the lung, combined with empyema. So little was known of the ordinary symptoms of the cancer of the lung, that he hoped the society would excuse him for detaining them, while he read an account of the case transmitted to him by an exceedingly scientific and accomplished physician, residing in one of the principal provincial towns in Ireland. The subject was a man, aged forty; his illness commenced in June, 1839, when he was supposed to labour under symptoms of hepatic disease. On the 9th of July, he was attacked with dyspnœa, which was relieved by bleeding, but was not otherwise ill. On the 7th of August, he expectorated some bloody mucus, and had lancinating pains in the right side of the chest, between the fourth and sixth ribs. At this time his pulse was 70, and regular; his respiration 26 in a minute; his tongue clean and moist; his skin cool; bowels free; and appetite good. The chief inconvenience he felt was, that he could not make a full inspiration, in consequence of the pain it produced. Both sides of the chest were symmetrical, but the right was dull on percussion over the lower half, both anteriorly and posteriorly; the left was quite natural. The respiratory murmur was feeble in the right, and puerile in the left lung. Here was a person with violent pain, difficult breathing, and dulness over a large portion of the right side, but without any fever, acceleration of pulse, or

derangement of digestion. The stethoscopic phenomena were clearness of respiration both before and behind, over the upper part of the right lung; below, respiration was feeble, and accompanied with wheezing. The sputa were very opake and the matter expectorated frequently presented the appearance of black currant jelly; but had none of the viscidity of pneumonic sputa. Decubitus in general on the back; he was blooded again, leeched, and cupped, and put on tartar emetic. On the 29th of August, dulness and absence of the respiratory murmur were spreading upwards, his dyspnœa increasing, so that he was unable to keep the horizontal position, and was obliged to have himself propped up in bed by pillows. His physician at this time had come to the conclusion, that he either had a tumour in the lung, or empyema, as the result of pleuritis; the latter opinion he subsequently adopted. On the 4th of September, there was little alteration, except the occurrence of an attack of neuralgic pain, to which he was subject, and which continued for several weeks. On the 2nd of October, the chest was measured, when the right side was found to be two inches larger than the left. The superficial veins of the chest and abdomen, which had been observed to be slightly enlarged about the latter end of August, were now considerably swollen and prominent, and there was œdema of the face. Over the right side of the chest, from the fourth rib downwards, there was dulness with absence of the respiratory murmur; pressure on the epigastrium produced most distressing sensations. On the 6th of November, the chest, which on the 2nd of October had measured two inches more on the right, than on the left side, was found to be again symmetrical; there was œdema of the face and right side, and the cough and expectoration continued. At this time he was seen in consultation by Dr. Stokes, who was struck with the remarkable size of the intercostal and epigastric veins, which were greatly enlarged, and anastomosed freely; some of them were nearly as thick as the little finger, and remarkably tortuous. He came to the conclusion that the patient was labouring under cancer of the lung, combined with empyema. From the previous history of the case, he was satisfied that there had been effusion into the pleura which had been partially absorbed; but it was clear that it had been followed by some alteration of the lung itself. It was found that although the side had returned to its usual dimensions, yet the upper portion of the lung had not regained its sonoriety. On examination, Dr. Stokes found that the condition of the lung was one of *perfect solidification;* there were none of the râles or other phenomena characteristic of imperfect permeability present, the signs were those of total obliteration of the air cells and complete solidification. This was a circumstance which was strongly opposed to the idea that the patient was labouring under phthisis. Cases of complete solidification of this kind are extremely rare. The next remarkable feature of the case was the appearance of the veins, which were extremely large and tortuous. This symp-

tom was first noticed by Dr. Graves as connected with the existence of tumours or malignant disease of the thoracic viscera. It might be said that this condition was owing to some compression exercised by the empyema on the deeper seated veins. This, however, could not be the case, for although the empyema had diminished, the veins had been increasing in size. These two circumstances, the complete solidification of the lung, and the varicose enlargement of the veins, becoming more marked notwithstanding the diminution of the empyema, led Dr. Stokes to the conclusion, that cancer of the lung existed. The circumstances of this gentleman's death were very painful. There was no change in his symptoms, except that the liver became gradually displaced, and pushed down into the abdomen. During the months of January and February, there was a rapid decline in his strength. For the last fortnight, he complained greatly of pain in the epigastrium and sense of weight in the stomach. His legs became œdematous, and he could breathe only in a particular posture; he sat on a chair with a pillow on his knees, on which he rested with his hands. His eyeballs became considerably enlarged, and the sclerotic presented a peculiar blue pearly appearance. His body became extremely emaciated, and he died quite worn out with suffering. On opening the right side of the chest, a quantity of puriform matter was found in the cavity of the pleura, which was lined with a smooth membrane. The lung was diminished, and strongly adherent in many parts. The substance of the lung was converted into a solid, white mass, intermixed with encephaloid and melanotic spots. The white substance was traversed by fibres in various directions. There were very few traces of vascularity in any part of the lung. The left pleura contained about a pint of serous fluid. The heart was sound, but the pericardium contained about eight ounces of serum.

Dr. Stokes then submitted a portion of the lung for inspection; it agreed exactly with the description given. He said the case was interesting in a practical point of view, as, during the prevalence of the disease, the question had been raised as to the expediency of paracentesis of the chest. There were two more symptoms in the case which were deserving of notice. One was the occurrence of a peculiar kind of expectoration resembling currant jelly; the other was, that this expectoration had for several weeks an intensely acid odour. (*Museum, Park-street School.*)

4. *Pott's Gangrene; Arteritis.*—Professor Harrison presented an example of Pott's gangrene. The patient was a woman, aged 76, and had always enjoyed good health. The disease was of very short duration. One of the most distressing features of the case, was the violent pain she suffered, from which she experienced no relief night or day. The disease commenced on the third toe, extending to the second and great toes, and from them up along the foot and leg. Nothing afforded the slightest relief, and she sank very rapidly. On dissection, nothing peculiar was observed

in the smaller vessels; they contained a quantity of serum, but no coagulum. The anterior and posterior tibial arteries were hard and studded with ossific particles; these, as well as the other arteries of the limb, were filled with dark coagulum. A portion of the femoral artery near Poupart's ligament was shewn by Professor Harrison; when opened, scarcely any appearance of a canal could be seen, and it contained a firm clot which adhered to the sides of the vessel, so that it could not be squeezed out without considerable difficulty. There was no apparent derangement of the nerves of the limb, except that they appeared somewhat more vascular than usual. Professor Harrison seemed to think, that the disease had originated in inflammatory action in the arteries, most of which presented patches of ossification. The heart was small, the coronary arteries were also ossified, and there were a few specks of bone in the valves. (*Museum, Trinity College.*)

5. *Fracture of the Neck of the Femur through both Trochanters.*—Professor Harrison presented also a specimen of fracture of the femur through both trochanters. The patient was an old man, who had been thrown off the flag way, and died a few days afterwards. The limb was shortened and everted, but no crepitus could be felt. On examination, a double fracture was discovered, passing through both trochanters, and uniting in an angle above. The lesser trochanter was nearly separated, being retained merely by a small portion of the periosteum; this fragment had made a small opening into the capsule, but there was no inflammation round it, nor was it much displaced. The neck of the bone was firmly impacted between the two trochanters. (*Museum, Trinity College.*)

6. *Dropsy of the Spinal Cord with Congestion.*—Mr. Adams wished to bring before the Society, the case of a man who had been brought into the Richmond Hospital about a month before with retention of urine, loss of power of the lower extremities, imperfect paralysis of sensation, and sloughing of the nates. All these symptoms had appeared in a very short space of time. The patient was a man about twenty-three years of age, had had venereal two or three times, and had used mercury to a considerable amount. Shortly after a mercurial course, and while still under the influence of the medicine, he had gone into the water: he was brought out weak and shivering, and next morning found that he had lost the power of his lower extremities. The symptoms under which he laboured were paralysis with rigidity of the muscles, a tympanitic state of the abdomen, retention and afterwards stillicidium urinæ. He was placed on a water bed, and the urine regularly drawn off, but he sunk rapidly, and died at the expiration of a month. On opening the spine, the chief phenomena observed were a large collection of water in the sheath of the cord and great congestion of its veins. Mr. Smith, who conducted the post mortem inspection, examined the whole of the spinal cord, and found it to be quite healthy. The fluid was entirely lodged in the lumbar region,

and was contained in the arachnoid sac. The fluid described by Magendie lies between the arachnoid and the pia mater. The bladder was found to be more or less inflamed, as is always the case in such instances. (*Museum, Richmond Hospital.*)

Twentieth Meeting, April 18, 1840.

Dr. Greene in the Chair.

1. *Permanent Patency of the Aortic Opening. Calcareous Depositions in the Sinuses of the Valves.*—Professor Graves exhibited a specimen, showing a deposition of bony matter filling the sinuses of the aortic valves, and producing permanent patency of the aortic opening; the opening was contracted to a very small size. The patient was a gentleman æt. fifty-four, of active habits; he had never felt any inconvenience, nor any deviation from a state of health, until about six months before his death, when in walking up a hill, he was seized with severe dyspnœa; he afterwards found that even walking rapidly upon level ground induced a paroxysm of difficulty of breathing. After each attack, however, he seemed to be quite well. About one month before his death, he was attacked with influenza, but he was not confined to bed, or even to his bedroom; after it had continued for about a fortnight, he consulted Dr. Graves, who found, upon examining his chest, that the heart beat violently and irregularly; there was also an irregular state of the radial pulse, a loud *bruit de soufflet*, accompanying the first sound of the heart was audible over the whole of the cardiac region; it extended as high as the top of the sternum; he had also bronchitis and cough, with paroxysms resembling those of asthma. His symptoms progressed with great rapidity, his breathing became more and more hurried, he had complete orthopnœa, became in the course of a few days dropsical, and died rather suddenly. (*Museum, Richmond Hospital.*)

2. *Permanent Patency of the Aortic Opening, with Bony Deposits in the Valves.*—Dr. Stokes exhibited the heart of a middle aged man, of exceedingly active habits, and who had always enjoyed excellent health. A short time before his death, he was attacked with shivering, symptoms of fever, and a certain degree of bronchial irritation. He was seen in the course of two or three days by his medical attendant, who found him labouring under symptoms of fever, with bronchial irritation and extraordinary excitement of the heart. The pulsations were exceedingly violent and tumultuous, and diffused over a very large space of the chest accompanied by bruit de soufflet, which was synchronous with the first sound of the heart. He went on tolerably well for three or four days, when he expired suddenly; his friends had only left the room for a few minutes, and on returning found him dead. *Post mortem* examination detected nothing in the head to account for death; there was neither effusion of blood or serum, and the substance of the brain was quite healthy. On opening the chest, the

heart has found to exhibit some unusual appearances. The left ventricle was distended to the greatest degree with fluid blood, and one of the most singular obstructions of the aortic valves on record, was discovered. In the case just detailed by Dr. Graves, the opening would admit the passage of full sized goose quill, but in this specimen, a small sized probe would not pass without the employment of some force; yet this individual had enjoyed uninterrupted good health, until his last attack. Dr. Stokes observed, that the narrowing was the most complete he had ever witnessed. No opening for the passage of blood could be perceived until the artery was examined on its ventricular aspect, when a very small slit was seen, through which it was just possible to pass the small end of a fine probe; it was about a line in width, and about four lines in length. The specimen was extremely interesting in itself, and tended to confirm an observation of Dr. Graves, that in cases of organic disease, the sufferings of organs depended more upon their vital, than on their mechanical conditions. Here there was no evidence of suffering, until the fever of influenza set in, by which the heart's action was so much disturbed, that it became unable to carry on its functions. In order to illustrate, still further, the absence of suffering in cases of ossification of the valvular apparatus of the heart, Dr. Stokes said, he would beg leave to show the aortic valves of the heart of a gentleman, who had laboured under the disease for five years, and had never suffered any inconvenience, except what he felt from constantly hearing an intense bruit de rape in his chest. (*Museum, Park-street School.*)

3. *Encephaloid Disease of the Stomach.*—Professor Graves exhibited the recent parts in this case. The subject, a car driver of intemperate habits, was admitted into the Meath Hospital, about a month since; he stated, that after exposure to wet and cold, he was attacked about three months previously, with a sense of weight and distension of the stomach, but without pain and tenderness. He had constant nausea and vomiting, followed by anasarca of the lower extremities; he then became jaundiced, and the bile disappeared completely from the alvine evacuations. At the period of his admission, it was evident, that he had a very large solid tumour of the abdomen, of an irregular nodulated shape, and his aspect was that of a person labouring under malignant disease. The patient died soon after his admission. Upon examination the disease was found to engage the stomach, and the folds of the omentum, which looked like so many masses of yellow fatty matter. On cutting into the stomach, a large quantity of dark-coloured fluid like coffee grounds, escaped, and the patient had vomited matter of similar character during life. The right half of the stomach, from the œsophagus to the pylorus, was converted into a mass of encephaloid disease. It was infiltrated with a white creamy fluid, differing somewhat in its aspect from the brain, like matter of cephaloma. The disease had also engaged the folds of the gastro-hepatic omentum, forming an enormous mass, which

by pressing upon the liver, and biliary ducts, had given rise to jaundice. The glands of the mesentery were also affected. The case was remarkable, both in consequence of the rapid growth of the tumour, and of the appearance of the disease in one so young, the patient being not more than twenty-five years of age. There was no disease of the pylorus. (*Museum, Richmond Hospital.*)

4. *Plastic Lymph voided from the left Bronchus.*—Mr. Smythe exhibited a portion of plastic lymph which had been voided from the left bronchus; its lower extremity was divided into two branches, and there were depressions formed on its surface by the cartilaginous rings of the bronchus. It was tubular, and admitted readily the passage of a probe. Previous to its expulsion, the patient suffered greatly from cough and distress of breathing. While the patient was in the act of leaning forward, a violent fit of coughing came on, and the lymph was expelled. A great number of smaller portions were brought up in the same way. The patient was labouring under phthisis. (*Museum, Richmond School.*)

5. *Fibrous Tumour of the Uterus.*—Dr. Kennedy exhibited a specimen of a large fibrous tumour growing from the side of the uterus; the remainder of the organ and its appendages were healthy. Dr. Kennedy also exhibited a number of drawings and preparations, illustrative of the various forms and situations of fibrous tumours of the uterus, and expressed his opinion, that these tumours were not unfrequently confounded with uterine polypi.

6. *Puerperal Arthritis Genu.*—Dr. Kennedy also exhibited the recent parts in this case: the knee joint was filled with purulent matter, but the bone and cartilages were sound. The case was one of puerperal peritonitis, followed by inflammation and suppuration of the knee joint. The woman died on the fifth day after delivery; the knee joint was attacked only two days before her death. (*Museum, Lying-in Hospital.*)

7. *Lenticular Cataract.*—Dr. Bigger exhibited a lens which was the seat of cataract, caused by a thorn having penetrated the eye; the accident was followed by severe inflammation and swelling, the thorn had remained in the eye for thirteen weeks; the lens was white and glistening. The operation for extraction of the cataract was performed, and the lens and thorn removed.

Twenty-first Meeting, April 25, 1840.

Sir H. Marsh in the Chair.

1. *Foreign Body in the Vermiform Appendix; Perforation of the Tube.*—Dr. Law said the specimen to which he was about to call the attention of the meeting, was taken from the body of a young woman, who had died in Sir P. Dun's Hospital, after a very short illness. The account she gave of herself was, that she had been in good health up to the previous Saturday, when she was seized with vomiting and pain in the abdomen, for which nothing was done until the following day. She was admitted into Sir P. Dun's Hospital on Monday, with well marked symptoms

of peritoneal inflammation, and also complained of pain running down along the right thigh, and died at ten o'clock on the same evening. An examination of the body was made about fourteen hours after death, when the following phenomena were observed. On opening the abdomen, about a pint and a half of greenish sero-purulent matter was found in its cavity, mixed with a few flakes of lymph. The peritoneal covering of the intestines was inflamed and vascular, and parts of it were covered with a coating of lymph; the vermiform appendix was found to contain a hard compact substance of a cinnamon brown colour, which was moulded exactly to the cavity of the appendix. There was no sign of inflammation about the open end of the appendix where it communicates with the cæcum, but towards the other extremity it was of a dark colour, and contained a quantity of lymph and pus. On passing a probe through the appendix in this direction, Dr. Law found that it passed into the cavity of the peritoneum. Where the peritoneum is reflected from the anterior wall of the iliac fossa, the cæcum was adherent to the walls of the abdomen, but there was no trace of inflammation or of ulceration of any part of the mucous membrane of the intestinal tube. The disease appeared to be confined to the vermiform appendix, from which it had extended to the peritoneum. Dr. Law said, that about three weeks ago he had submitted another case of a similar kind to the notice of the Society, in which the vermiform appeudix opened into the cavity of the peritoneum, and in this way gave rise to inflammation. In that case, however, he had not discovered any foreign body in its cavity. There was one remarkable circumstance to which he begged leave to direct attention, namely, an emphysematous condition of the submucous tissue of the small intestines, a condition which was present not only in the present specimen, but also in that which he had last shewn. The appearance to which he alluded was still visible, and could be seen satisfactorily in the preparation. (*Museum, Sir P. Dun's Hospital.*)

2. *Foreign Body in the Vermiform Appendix.*—Sir Henry Marsh said, the case brought forward by Dr. Law was extremely interesting, and it was a singular circumstance, that two cases of a similar description had lately come under his observation. One of these was that of a medical student, whom he had very lately seen in consultation with Drs. Benson and Houston. The particulars of the case he would not detail, because he was quite sure, that all the facts connected with it would be made known to the Profession, by the gentlemen who had an opportunity of closely observing the whole progress of the case. All he should say was, that in the case he had alluded to, a foreign body had been discovered in the cavity of the vermiform appendix, that this had produced inflammation, and the formation of an abscess, which ultimately burst, and was followed by fatal peritonitis. The case which he wished to bring before the Society was one of a remarkable character, and in which the presence of a foreign body in the vermiform appendix had given rise to the

disease, by which a very valuable life was lost. The substance he held in his hand, was a concretion which was lodged in the Vermiform Appendix; it was reduced in size by evaporation, but it still retained its original shape, which is that of a kidney bean.

There were also two other concretions of the same character and form, smaller than the one now exhibited. There was no inflammatory affection of the internal coat of the intestinal tube; the only part of the mucous membrane which exhibited signs of inflammatory action, was that which lined the vermiform appendix. One of the concretions had been submitted to chemical analysis by Mr. William Colles, the Lecturer on Chemistry in Park-street; and it was found to consist of indurated feculent matter combined with animal matter. The Vermiform Appendix itself was greatly altered, it was thickened, of a deep chocolate colour, and its whole internal surface covered with a dense layer of coagulable lymph. From this point the inflammation extended over the peritoneum to the adjoining parts, namely, the caput coli, the ascending colon, the concave surface of the liver, the right kidney, a considerable portion of the small intestines, and down to the edge of the psoas muscle. All these parts were covered and glued together by a coating, fully half an inch thick, of pultaceous lymph, and on separating portions of this, a few ounces of purulent matter escaped. The whole of the intestinal tube presented, on its external surface, evident marks of inflammation, having been universally injected, and of a deep chocolate colour, but there were no adhesions except on the right side of the abdomen.

Sir H. Marsh said the case was one of peculiar interest, particularly when viewed in connexion with those detailed by Dr. Law, and the other which he had mentioned himself. He might observe, that in the case under consideration, the progress of the symptoms corresponded with the morbid appearances. For the space of fifteen or sixteen hours, the patient had complained of pain under the false ribs of the right side, and in the right lumbar region, but had not applied for advice.

At the end of this period, when first seen by Sir H. Marsh, he had no fever, his pulse was natural; his abdomen soft; and he complained only of pain in the right hypochondrium, extending to the loins, and increased by a full inspiration. Immediate and decisive measures were taken to check the inflammation, and the result was a complete subsidence of the pain. After the lapse of some hours, the pain returned, but still there were no constitutional symptoms; active means were again resorted to for its removal, and were followed, as before, by a marked abatement of the symptoms. Towards night the pain returned with greatly increased severity; the patient had a severe and prolonged rigor; high fever set in; and the belly for the first time became tympanitic, and universally painful on pressure. The symptoms now scarcely yielded to treatment, and in a few hours it was evident that the disease had so rapidly extended, as to be altogether beyond control. There was soon a total depression of the

vital powers, and the patient sank rapidly from the effects of widely diffused peritoneal inflammation. It was certainly remarkable in this case, that the only part of the mucous membrane which exhibited marks of inflammation, was the internal surface of the vermiform appendix. It is also worthy of remark, that many hours—from the time when pain was first complained of—elapsed, before the constitution generally appeared to be in the least degree engaged, and even then the local symptoms appeared for a time to have been controlled by treatment. Sir H. Marsh had omitted to mention, that during the last few hours of the patient's life, he had complained very much of pain along the right thigh with retraction of the testis, and painful and frequent micturition.

3. *Plastic Lymph expectorated.*—Sir H. Marsh said, he would trespass a few moments longer on the attention of the Society, for the purpose of shewing a beautiful and very accurate drawing of concrete lymph moulded into the form of the bronchial tubes. The drawing represents one of many of the expectorated portions of these solidified bronchial exudations, or, as they are often termed, bronchial polypi.

There is the large trunk of the numerous and gradually diminishing ramifications. The arborescent form is accurately preserved. The globules of air retained and entangled in the middle of the tubes are well expressed in the drawing. These concretions or polypi are most firm and solid on the surface in contact with the mucous membrane from which they were exuded.

In receding from the points of contact towards the central parts, the matter became less and less firm, till in the middle it was semifluid, and presented the characters of soft mucus with numerous globules of air entangled in it. In this accurately resembling the adventitious membrane in true croup, which in like manner (if the case be not one of too short duration) is firm and coriaceous along the surface of contact, and becomes softer and more fluid toward the middle of the tube. In the minute tubes it generally happens that the solidified character of the lymph gradually disappears, and the matter exuded presents a soft and puriform aspect.

[Sir H. Marsh here exhibited a drawing of the adventitious membrane in croup in a child who died of that disease.]

These adventitious membranes lining the air tubes, if not by a natural effort detached, would no doubt assume a still more solid condition, adhere to the surface, become organized, and put on all the characters, as in other parts, of an organized false membrane. Of precisely the same nature are these larger and longer tubular masses, which are occasionally expelled from the mucous surface of the intestines; the concrete lymph moulded into the form, and exhibiting even a cast of the intestinal tube; of this I have seen a few very remarkable instances.

In most of the recorded cases of bronchial polypi, it is stated that the expulsion of this substance is the result of violent, distressing, and suffocative cough. This is exactly what we should anticipate, and

yet, strange to say in this case, they were expectorated with the greatest ease: so much so, that the patient herself, in describing the process, said, (to use her own words,) that they "walked up into her mouth;" and so little did she regard this curious occurrence, that she never alluded to it in describing her symptoms and sensations; and it was by the merest chance it was discovered that such substances had been coughed up. At one time, during her illness, the patient expectorated so large a number of these polypi, that if collected and expanded, they would, as she herself averred, have covered a large table beside which she was seated. The nurse collected a great number of them, and sent them about amongst her acquaintances as curiosities. In this case the breathing was laboured and the chest oppressed, previously to the expectoration of these masses. After they had been coughed up she felt herself much relieved, and the respiration, she said, was considerably less embarrassed. Of this peculiar affection, she had (during the progress of her long illness) two distinct attacks. Between these attacks there was an interval of nearly three months: during this interval not one of these polypi was ascertained to have been expectorated. During each attack she continued for several successive days almost incessantly to cough them up. The quantity of them expelled without trouble or exertion during each of these attacks was almost incredible.

The patient by whom these substances were expectorated was affected in a peculiar manner. The disease under which she laboured merits a distinct notice. Sir H. Marsh has not any where met with a description of this disease. Its characteristics are—inordinate action of the heart; habitually quick pulse; enlargement of the thyroid gland; and in every case Sir H. Marsh has witnessed, a remarkable prominence and protrusion of the eye-balls, giving to the eyes a peculiar stare. He has seen several cases in which every one of these symptoms, in a greater or lesser degree, co-existed and stamped upon the case a peculiar and distinctive character. All those seen by Sir H. Marsh, affected with this disease, were females; all presented unequivocal marks of the strumous diathesis; all were naturally thin, and as the disease advanced much emaciated. In these cases the pulse is habitually and permanently quick, and in some instances singularly rapid. Palpitations, often violent, and dyspnœa, are caused by the least unusual muscular exertion, and by every stronger mental emotion. The heart's impulse gives to the integuments a considerably increased perceptible motion. The sounds sharp, loud, and short, like those which characterize nervous palpitations. They are heard loudly throughout the chest on both sides; but unmixed with any bellows or other abnormal sound. When the cardiac action is much agitated the venous system is gorged; the veins of the neck prominent and distended. The thyroid gland permanently enlarged, palpably swells and subsides, as the heart's action increases and diminishes. The protrusion of the eyes likewise keeps pace with the degrees of the heart's action. Of the patients thus affected the countenances were pallid, and as the disease advanced the lips and cheeks presented, in various degrees, a purple shade.

In two cases amongst six observed by Sir H. Marsh, there was slight spinal tenderness; in the other four no trace of this symptom existed, nor was there any pain on pressure. The symptoms were always greatly aggravated by every catarrhal affection, or by any material disturbance of the digestive functions. In these cases generally, at the early stage, the catamenia were regular. This disease, if not far advanced, Sir H. Marsh has found perfectly amenable to treatment. That which he has found effectual, in four cases, is, firstly, very small bleedings, repeated at intervals of three or four days, either by leeches or cupping over the region of the heart: the latter, as being less debilitating, he has preferred. Secondly, a combination of tonic and sedative treatment. The inordinate action of the heart has been in these cases obviously restrained by small doses of Belladonna, also by Prussic acid; and less remarkably, but still to a certain degree, by Digitalis. The milder preparations of iron were given in conjunction with these remedies. This medicine was markedly useful: it did not increase the heart's action; it altered the state of the blood, inasmuch as every case was characterized by a deficiency in the red globules. Thirdly, a diet sufficiently nourishing, but not stimulating: tranquillity of mind and body were strictly enjoined. Nothing in treatment appeared so effectual as prolonged quiet journeying; changing air and place for a long continued period of time. All those affected with this disease were benefited by this treatment; three apparently were perfectly cured. When the disease, either from neglect of proper treatment, or from other causes, increases, all the essential symptoms are materially aggravated. The heart beats more violently and rapidly; the breathing becomes more hurried and distressing; the veins more swollen; lividity more marked; the thyroid gland increases in size; the eyes assume a more staring and prominent aspect; emaciation advances; and lastly, the patient becomes universally anasarcous.

Sir H. Marsh saw, not long since, a young female affected with this disease, in whom the anasarca yielded twice to treatment, and who was twice restored to what her friends deemed perfect health, by travelling, and frequent change of air and place: the anasarca having been previously removed by diuretics. Of the cases of this disease, seen by Sir H. Marsh, three had, from an early period of life, lateral carvatures (not however of any very considerable extent) of the spine. In one case, (that of the lady who expectorated the polypi,) the disease advanced slowly to a fatal issue. For many weeks before death she was affected with symptoms of organic disease of the heart; violent, irregular palpitations; dyspnœa; orthopnœa; lividity of the countenance; coldness of the extremities; dozing and starting suddenly in a fright; delirium; anasarca; and ultimately effusion into all the cavities. Her sufferings before death were prolonged and most painful to witness.

From the time when the earliest signs of the disease manifested themselves to her death, a period of at least seven years elapsed. Often during that time, she appeared comparatively reinstated in health;

but on each occasion, severe catarrhal affections, caused by exposure to cold, sometimes anxiety of mind, or excessive fatigue or exertion, from which she would not be restrained, reproduced, in an aggravated form, all the most urgent symptoms of the disease.

From a consideration of all the cases, it would appear, that at the first, the cardiac disturbance is purely functional, and that long continued altered function produces ultimately organic disease. No opportunity has been afforded of examination after death.

4. *Deposition of Tubercular Matter in the Prostate Gland; Vesiculæ Seminales, Vasa Deferentia, and Testicles; in the Lungs, Liver, bronchial, mesenteric, and inguinal Glands, with scrofulous Caries of the Hip and Knee Joints, Spine, and Tarsus.*—Mr. Smith exhibited a series of preparations, shewing the effects of scrofula upon numerous organs and textures of the body. They were taken from the body of a man, æt. 30, who was admitted into hospital, November 1st, 1839, and died April 24, 1840. During the intervening period, he merely complained of symptoms referrible to the chest; he never attracted attention to the condition of the joints, or genital organs: he died hectic. During life, the man had a large tumour projecting under the clavicle, which had been found to be a scrofulous abscess, and which had been diminished very considerably a short time before his death. It had most probably commenced in a lymphatic gland, but during its progress it had passed inwards, and producing caries of the second rib had perforated the anterior mediastinum. The sac of the abscess had become adherent to the lung, but no matter had escaped into the pulmonary tissue. The diminution in the size of the external tumour had taken place when the matter had passed into the anterior mediastinum. The bronchial glands were very much enlarged, and one of them pressed on the trachea, forming a protrusion of a portion of its wall internally; when cut open it presented a mixture of scrofulous, with the black matter which is generally found in these glands. The lungs were comparatively free from tubercular deposition. The tubercles were few in number and confined to the lower lobe of one lung. These, with traces of chronic pleuritis, were the principal morbid phenomena observed in the chest. The substance of the liver was tolerably healthy, but there was a large number of miliary tubercles deposited under its peritoneal covering. The mesenteric glands were enlarged, and filled with scrofulous matter. The glands both above and below Poupart's ligament were similarly diseased. The left hip joint presented an example of scrofulous degeneration. Externally there was a tumour of considerable size, which had passed upwards on the dorsum of the ilium, and was formed by an immense abscess, filled with scrofulous matter. The head of the bone was softened and carious, and the cartilage of incrustation raised and detached from its surface. There was another large abscess in front of the lumbar vertebræ, the body of one of which was carious opposite the situation of the abscess. In fact, a chain

of diseased glands extended from the thigh under Poupart's ligament, along the side of the pelvis and spinal column. There was another scrofulous abscess in front of the lower dorsal vertebræ; and tumours of a similar nature projected into the spinal canal, implicating the spinal nerves near the exit. Scrofulous inflammation had also attacked the right knee joint; but there was no matter in the articulation. The bones of the foot also presented marks of scrofulous caries. The urinary and genital organs were also affected. There was enlargement and deposition of scrofulous pus in the vas deferens, vesiculæ seminales, and prostate gland. The prostate was considerably increased in size, and filled with matter which could be squeezed out of into the urethra. One testicle was enlarged, and filled with scrofulous matter.—(*Mus. Richmond Hos.*)

Sub-Cutaneous Section of forty-two Muscles and Tendons, to remedy general Deformity, by Jules Guérin.—Jules Guérin laid before the Academy of Sciences, August 31st, 1840, an account of a case in which he practised the sub-cutaneous division of forty-two muscles, tendons, and ligaments, in order to remedy a general deformity of the articulations. We report the case in the words of this celebrated surgeon and orthopoedist. "I have the honour to report to the Academy the history of an operation which, in respect to its generality and its immediate results, appears to me to establish definitively the value of a principle which I endeavoured to establish in my memoir on sub-cutaneous wounds, viz. that these wounds, if sheltered from the contact of the air, are not liable to be attacked with suppurative inflammation. Upon the 25th of the present month, at 5 o'clock in the evening, I divided, in a young man, æt. 22, forty-two muscles, tendons, or ligaments, in order to remedy a series of deformities in the body and limbs, produced by the contraction of the muscles and the ligaments. This series of operations required twenty-eight openings in the skin. The muscles, tendons, and ligaments divided were as follows:—

The pectoralis major, . .	1	*Forward*	23
The biceps, in each arm, .	2	The semimembranosis, . .	2
The pronator teres do., . .	2	The semitendinosus, . . .	2
The extensor carpi radialis .	2	The rectis femoris, ...	2
The flexor sublimis, do. . .	2	The fascia lata, ...	1
The palmaris brevis, do. . .	2	The external lateral ligaments of the knee, . . .	2
The tendon of the extensor carpi ulnaris, ...	2	The tendo Achillis, . . .	2
The tendon of the palmaris longus and brevis, do. .	4	The tibialis anticus, . . .	2
The tendon of the abductus pollicis, do.	2	The extensor communis, . .	2
The sartorius, ...	2	The extensor pollicis, . .	2
The biceps cruris, . . .	2	The peronæus longus and brevis, ...	2
	23		42

The patient experienced but little pain or fatigue: in an hour

after the operation he fell into a deep sleep. Upon the third day the twenty-eight wounds were perfectly healed, without the supervention of inflammatory action. The operations were performed at La Muette, in the presence of many French and foreign physicians, among whom were MM. Arendt, Surgeon to the Emperor of Russia, Valentine Mott of New York, Donbowitsky of St. Petersburgh, Begurn, Chervin, Delherbe, Donné, Fiévé, Forelle, Jacob, Nuhn, Levy, R. Parise, Rayer, Ribes, and Valenciennes, of Paris; and Bataille, Boucher, Navart, Noble, Penard, and Vitry, of Versailles. I shall not at present allude to the circumstances connected with this remarkable case which bear upon my opinions with respect to the common origin of particular deformities. I wish merely now to allude to the circumstance of the division of forty-two muscles, tendons, and ligaments, with twenty-eight wounds in the skin, being performed without being followed by any inflammatory action. That the operation may not be subjected to the imputation of rashness, I may add, that since I have ascertained, by numerous experiments upon animals, the perfect freedom from danger of sub-cutaneous wounds, I have, as regards man, established the same principle by a gradually increasing series of operations, from the division of a single muscle to the section of a great number."—*Gazette Medicale*, September 5th, 1840.

On the Presence of Iodate of Potassium in Commercial Iodide of Potassium, and the Mode of detecting it, by Maurice Scanlan, Esq., Wolverhampton.—Mr. William Bailey, of this town, who, amongst other chemical products, has lately become a maker of iodide of potassium on the great scale, has, within a few days directed my attention to an examination of a specimen of this salt made by a house of deservedly high repute, as manufacturing chemists, near London; and whose name is generally looked upon, in the trade, as giving the stamp of purity to any chemical to which it may be prefixed.

It appears that hydriodic acid is sometimes exhibited as a therapeutic agent, and the method resorted to for its extemporaneous preparation is that recommended by Dr. Andrew Buchanan, of Glasgow. It consists in mixing together, in proper proportion, iodide of potassium and tartaric acid, both in solution.

Now, the quantity of free iodine liberated from this salt, which I have under examination, when treated with tartaric acid, in the way just mentioned, has led some dispensing chemists to suppose, that it contains more iodine than other specimens of iodide of potassium, which, when treated in a similar way, afford a solution that is colourless, or, at most, of a very pale yellow colour; and hence, as I am informed, some actually look upon tartaric acid as a test of the value of commercial iodide of potassium, assuming the salt of which we are now speaking as a standard of comparison. How far it may be depended upon as a test, will appear from what follows.

If tartaric acid in solution be added to a solution of pure iodide of potassium, the commixed solutions are at first colourless, but

quickly become slightly yellow, owing to the action of atmospheric oxygen on the hydriodic acid which is thus generated.

On making this experiment with the salt in question, I found, to my great astonishment, that free iodine, in quantity, was instantly developed. I was at first at a loss to account for so great a difference in the behaviour of this salt to that which I had prepared myself, and knew to be pure iodide of potassium; but from the appearance of the crystals of this salt, and from the circumstance of its not being soluble in water to the extent that it should be, I suspected the existence of iodate of potash in it, and I have since convinced myself of the fact of its presence.

I find, if we add tartaric acid solution to a solution of iodate of potash, no change of colour takes place, but that bitartrate of potash is deposited in abundance, and, as a matter of course, iodic acid set at liberty, this solution instantly decomposes iodide of potassium in solution, giving rise to free iodine in great abundance; or, if we add a drop of solution of tartaric acid to a solution of pure iodide of potassium, to which even a minute quantity of iodate of potash has been added, free iodine is instantly developed.

Tartaric acid appears, then, from the experiments I have made, to be a very delicate test of the presence of iodate of potash in iodide of potassium, and will be found a very ready and useful one for this purpose in the hands of the dispensing chemist, showing him that any specimen of this salt in which free iodine is thus developed, is actually of less value than one in which no trace of iodine appears on the instant of its application; inasmuch as iodide of potassium, in a given weight, includes more iodine than iodate of potash does; as is seen at once by the atomic composition of these two salts.

It is well known to every chemist, that one of the methods very commonly resorted to for the production of iodide of potassium is that of acting upon iodine with potash water. In this way we form iodate of potash at the same time; six atoms of potash and six atoms iodine giving birth to five atoms of iodide of potassium, and one atom of iodate of potash; which latter, if suffered to remain mixed with the iodide, would increase the produce of the manufactured salt nearly five per cent., at the expense of its purity and crystalline beauty.—*Lancet*, August, 1840.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XII.—*A Case of Tumour of the Brain, with Hydrocephalus, and Arrest of Development of the Uterine System.* By JOHN O'BRYEN, M.D., &c. Clifton.

BEFORE entering on the history of this case, I shall give the following notes of the external appearances of the patient, which were taken two years previous to her death.

Mary Morgan, aged 20.—The forehead is much elevated, it measures from the arch of the eye-brow to the root of the hair three inches and a half. Her head, though large in proportion to the rest of her body, is not remarkably so, its circumference being twenty-one inches and a half; the sutures very irregular, having a hard elevated ridge along them; the development of the occipital bone remarkably great. At the angle usually occupied by the ossa triquetra, when they exist, ossification does not appear to have taken place, as this spot presents some elasticity, and a general uneasiness

is felt within the head when it is pressed. The face, and, indeed, the *tout ensemble*, is that of a child between eight and ten years of age at the utmost, without much expression, pale and sallow; the *alæ nasi* rather flat; under lip very large and full; the eyes are blue, full, and very prominent; pupils large, iris equally contracted in both eyes, occasional strabismus of the left, the humours of which are rather more transparent than those of the other; total loss of sight in it since her seventh year; very imperfect vision with the right, our little patient being incapable of reading large print without glasses, and even requiring them to be very powerful.

The glands of the neck, particularly on the right side, are much swollen; the muscular development is very imperfect; the mammæ are not more prominent than they would be in a child of eight years of age; the nipple is not larger than the head of a large pin; no areola.

Abdomen very large and tense; around the pelvis externally, underneath the crest of the ilium, it measures twenty-four inches; from the superior and anterior process of the ilium on one side to that of the opposite, it measures seven inches and a half; from the inferior edge of the coccyx to the pubic insertion of the recti muscles, it measures six inches and a quarter. No appearance of hair on the pubes. Menstruation has never occurred. There is a falter or weakness in the right leg during progression.

Anterior History.—She states, and her mother confirms her report, that at the age of two years she had a fright which gave rise to fits, which have since continued, varying in the frequency of their appearance from every six to every twelve weeks, being most probably epileptiform; also that the right side of the body was paralyzed about the same time, and continued so for twelve months; this state having been preceded by symptoms of disease within the head; the fits having continued for four days, accompanied by vomiting prior to the paralytic attack. At seven years of age she had another such attack, preceded by the

same symptoms of irritation of the membranes of the brain, at which period she lost the sight of the left eye, the left side was this time paralyzed, and remained so for eight months.

From this period till she was fourteen years of age the fits continued, but were very slight, during which time she learned to read and write, and was not considered stupid, though her intellectual powers must always have been limited.

At the age of fourteen, the fits became more severe, and of longer duration. Menstruation did not appear, nor did any change take place in her manners or habits, as is usual at this period of female life; no preference for the society of men was observed even up to twenty; on the contrary, she has rather shunned it, and still prefers the toys of childhood, and children of five and six years old for her playmates.

In the month of June, 1836, she became heavy and feverish, with shivering and great fulness of the abdomen, which was followed by numbness, formication, and spasmodic contraction of the whole right side of the body, she had also an epileptic fit which lasted two hours. After these symptoms had continued for some time, with slight delirium, the right side became paralyzed; the power of speech and motion have gradually returned up to this day, November 12th, 1836. It is remarkable that there is a spasmodic action occasionally of the muscles of the left eye; she has had no fit since her last attack of illness in June; she suffers from violent intermittent headach, with weight in her head, and a great disinclination to move it; when her bowels are confined, she feels great desire to sleep; the expression of her countenance is very childish, and she has much difficulty in articulating her words distinctly; there is a falter in her right leg, which she appears to drag after her; she is subject to take cold, and complains occasionally of pain in her chest; never spits blood; no dyspnœa; the thorax dilates well and equally on inspiration, neither percussion nor auscultation indicate any disease; the other functions are normal.

I lost sight of her until August 18th, 1838, when I was sent for to see her; I found her lying on her back, with her eyes closed as if in sleep. Her mother informed me, that, for the last three months, she had frequently slept almost a whole week, without any other interruption than that of being aroused at meal times, when she would eat, and again return to the same state of torpor. She now sent for me, because she could no longer awaken her as usual, for the last five days, since when she has had convulsions every four or five hours; her face looks calm; the pupils are contracted and insensible; the muscles of the right side of the face slightly contracted; the right arm and leg bent, and continually moving from one position to another; she also moves the left leg and arm occasionally; during the convulsions, the right side of her body is principally affected. When either leg or arm is pinched, it is immediately withdrawn, but sensation, though apparently perfect in both sides, is evidently much more acute in the right arm and leg. Respiration rather slow, but otherwise natural; no stertor. The skin is cool, except that of the head, which, before the convulsions, becomes very hot, and the face, instead of its usual paleness, becomes flushed; but if this is perceived, the timely application of pieces of linen dipped in vinegar and water to the forehead, will prevent their recurrence.

A month before she became so sleepy, that is, four months since, her habitual headach became much more intense, and she lost for a day or two her always imperfect power of speech: her bowels have not been once moved for the past week. For the last two days she has been unable to swallow any thing.

I ordered her hair to be cut off; and that she should have two drops of Croton Oil put upon the tongue, to be followed in an hour by a cathartic enema, with Spt. Terebinthinæ; sinapisms to the feet. The next day her mother sent me word not to call again, as the patient was dying.

Sectio Cadaveris, forty-eight Hours after Death, August 24, 1838.—Exteriorly, the body is fat, and looks like that of

a child of ten years old; no appearance of decomposition; no hair on the pubis or under the arms; the mammæ are not developed, the nipple extremely small.

Head.—The calvarium is very thin and translucent, though entirely ossified, particularly at the juncture of the occipital and parietal bones. The dura mater very much thickened, white, and extremely resistant; it adheres to the calvarium with great force, so that I could not separate the latter without the scalpel. The arachnoid is also thickened, of a milky whiteness, and very tense pieces of four inches square can be removed without breaking. The convolutions of the brain are almost obliterated, and can be traced with difficulty. The substance of the brain is perhaps softened, but as it is all of the same consistence, this point is not easy to determine.

One slice, of half an inch in thickness, was removed from the right hemisphere, the membrane lining the right ventricle appeared distended with fluid; scraping it with the scalpel did not break it; it more resembles, in appearance and consistence, a fibrous membrane than a serous one. A slice of less thickness, removed from the left hemisphere, brought the membrane lining the ventricle into view, which was also white, tense, and very resistant, the ventricle being also distended with fluid; in fact the brain was reduced to a sort of shell, no part even of the base being thicker than one inch. Upon pressing the left ventricle with the point of my finger, I could distinctly feel a hard fixed body in the midst of the fluid. I now made a small aperture in the lining membrane of the right ventricle, when about sixteen to eighteen ounces of clear serum escaped, and as it escaped, the brain lost its round appearance and became flattened. I now laid open the ventricles, which were straight, their lining membrane so resistant, that when I pressed the scalpel upon it, the subjacent cerebral substance was cut through, and yet it remained undivided. A tumour arose from the anterior part of the left optic thalamus, covered by the lining membrane of the

ventricles, which it apparently pushed before it; its point was directed obliquely from within outwards, being about one inch above the floor of the left ventricle. I now removed the brain from the skull, leaving the tumour adherent to the dura mater, or rather to its lining membrane; a second branch of the same tumour now appeared, extending along the petrous portion of the temporal bone, and penetrating the tentorium cerebelli, above the internal auditory foramen, and was very firmly adherent to the arachnoid covering the left lobe of the cerebellum. The brain removed, and the base turned upwards, with the cerebellum towards me, it presented a loss of substance, into which the tumour fitted exactly, commencing to the right of the tuber annulare, (this being intact,) including posteriorly one-fourth of an inch of the crus cerebri, and proceeding anteriorly, involving two convolutions of the middle lobe, to the depth of nearly one inch, on the outside leaving the fifth pair, and on the inside the corpora albicantia intact; here the tumour penetrated the left optic thalamus, destroying a part of the corpus striatum more anteriorly, the left optic nerve posterior to the commissure, and the first pair at their origin. Thus the tumour appears to have destroyed in succession the left optic nerve, posterior to the commissure, which latter remained intact, though rather flattened; secondly, the first pair on the same side; thirdly, the left optic thalamus and part of the left corpus striatum, thus causing a loss of substance, through which one branch entered the ventricle, pushing before it the lining membrane. The lateral branch destroyed two convolutions, and above a quarter of an inch of the left crus cerebri, penetrated the tentorium cerebelli, and was simply adherent to the arachnoid covering the superior surface of the left lobe of the cerebellum, to which the dura mater was so adherent, that it could not be separated from it even with the scalpel. To return to the base of the cranium, the left anterior and posterior clinoid processes were absorbed, and the tumour, with a narrow base, was adherent to that por-

tion of the membrane lining the dura mater which covers the left carotid after it enters the cranium.

The pineal gland I could not find: the form of the base of the cranium, with the above exception, was normal. The tumour divided into two portions, one grew upwards and entered the ventricle, and the other was directed along the petrous portion of the temporal bone. This morbid growth presented a notch near its base, under which passed intact the third, fourth, and sixth left cerebral nerves, and first part of the fifth pair.

The surface of the tumour is very rugged, and it appears to be principally formed of calcareous matter. It measures from its base upwards of two inches, and from the base to end of its lateral branch, two inches and a quarter, varying from one and a half to one inch in breadth. *The cerebellum was the only part of the cerebral mass perfectly healthy*, if we except the adhesions spoken of above.

Thorax.—Lungs healthy; no adhesions; the heart situated more in the centre than is usual in the adult; its structure is normal, as well as that of the pericardium, which contained about two ounces of serum.

The parenchyma of the liver, which was very small, was normal, its left lobe being nearly as large as the right; the stomach and intestines healthy. The uterus existed only in miniature, it measured one inch in length, one line and a half in thickness, and four lines in breadth, which latter was the same at the os tincæ and at the fundus. The ovaries were each about the size of an almond, and when divided, present two or three cavities. The fallopian tubes were well formed, but their openings in the uterus were much larger than usual; the os tincæ was about the size of a small pea, and very soft; the vagina was small, and has very few rugæ.

That Mary Morgan was the subject of an acute attack of hydrocephalus at two years of age, the history of the case abundantly demonstrates; that it continued under a more chronic

form is proved from the morbid appearances, as well as from the symptoms observed during life. At what period the tumour commenced its growth, and whether the hydrocephalus was the consequence of its irritation, or whether they were two separate diseases, the one independent of the other, I feel quite unable exactly to determine.

The facts now recorded of this very interesting case might furnish abundant material for physiological disquisition, particularly with reference to the doctrine of the semi-decussation of the optic nerves, which we owe to the celebrated Wollaston. Here the left optic nerve was destroyed posterior to the commissure, which latter remained free from disease, and the symptoms were, loss of sight of the left eye, with preservation of the clearness of its humours, and partial loss of sight of the right eye. I may, at a future period, return to the consideration of this point.

The case, too, is of great value as bearing on the connexion between the cerebellum and the generative organs. What a triumph to phrenology would this case have been, had the tumour, in place of engaging the optic thalamus and corpus striatum, existed in the cerebellum itself; as it is, it must constitute one of the many arguments against the phrenologists, which pathology has furnished.

ART. XIII.—*On the general Characters of Rachitis.* By JULES GUERIN, M. D., Directeur de l'Institut Orthopédique de la Muette, chargé du service special de Difformités à l'Hôpital des Enfans Malades de Paris.

[Translated from the French by S. LENOX L. BIGGER, M.B., T.C.D., L.R.C.S.I., Surgeon to the Adelaide Hospital.]

CONSIDERABLE difference of opinion exists amongst surgeons on the meaning of the word "rachitis," on the general phenomena of this affection, on the nature and frequency of the deformities

which characterize it, and on the different kinds of alterations which it causes in the osseous system. From the etymology of the term, the name of rachitis is commonly given to deformities of the vertebral column; but these deformities are rarely the consequences of the disease to which they are attributed. A great number of authors have applied this term to all kinds of softening of the osseous tissue, which occurs during the adult age: such were the cases of the woman Sonpiot, reported by Morand; and of the woman with claws observed by Morandfils, as well as many other examples of ramollissement of the osseous system, recorded in various scientific papers. Lastly, it is not uncommon to find surgeons who confound rachitis with scrofula, or combine them as producing the same effects; nevertheless, neither the greater part of deformities of the spine, nor the disease of the woman Sonpiot, nor a large number of other accounts of cases of presumed rachitis recorded in science, nor scrofulous affections of any kind, belong to rachitis, nor are they allied to it in any degree.

This wandering and obscurity in writers prove to me that there exists very little precision in their notions with regard to the malady for which the term rachitis, such as it has been established by Glisson, Mayo, and Jean Louis Petit, ought to be reserved.

To combat these difficulties, I have made numerous researches on the external characters of this affection, its mode of invasion, and the effects which age and sex have on its development, the parts of the bony structure which it successively attacks, the general phenomena which precede and accompany its progress, the alteration in form and texture which it produces in the osseous tissue, the circumstances which favour its occurrence, its presumed cause; finally, I have endeavoured to give an accurate diagnosis of rachitis, by which it can be distinguished from those affections with which it has been confounded. Each of those points I have examined separately as indispensable to the distinguishing the disease, and I feel con-

vinced that the greater part of those descriptions already given, as applicable to a single disease, have combined in a confused manner characters belonging to many maladies, and have omitted those which specially belong to rachitis. The result of these researches, attentively pursued through a period of many years, in a great number of subjects, varying in age, sex, and condition, forms the object of this paper.

I. FORMS AND GENERAL CHARACTERISTICS OF RACHITIS IN THE SKELETON AND IN THE LIVING BODY.

To form directly a general idea of rachitis, and to obtain at one glance a collection of the external forms and characters which this affection assumes in its full development, it will suffice to examine alternately the skeleton of a subject which has suffered from it in a marked degree, and a living individual in which it has reached its most advanced stage.

In the skeleton, on a first view, it is evident that the whole bony frame from head to foot has undergone numerous changes of form, proportion, and direction. The bones of the limbs are regularly curved into the form of arches, more or less twisted on their axes, principally the tibiæ and fibulæ, then the femora, and the bones of the superior extremities, in a less degree: the extremities of these bones are tumefied, rounded, enlarged, and deformed; the articulations of the feet and hands are irregular in their directions and relations; the apophyses and points for muscular insertion are prominent; the ribs are rounded as if puffed out, and present at their sternal extremities a curvature, the concavity of which looks forwards and outwards; the thorax is thus flattened transversely, and exhibits a channel-like depression at the junction of the articulations of the ribs with the costal cartilages.

The vertebral column is curved laterally or posteriorly, and presents a succession of alternate curvatures. The surfaces of the vertebræ are rounded as if distended and puffed out, and present in many points depressions which bring the articular

surfaces of their bodies unnaturally close. The vertebral processes participate in the same appearances and are more or less depressed, as if crushed down in the direction of vertical pressure and that of the muscular action. The pelvis has lost its symetrical conformation; the sacrum is sometimes vertical, sometimes more curved than in the normal condition, and is much increased in thickness. The ossa innominata are more or less closely approached to one another, and curved upwards and inwards; they are every way thicker than usual, and share in the general puffed out appearance of all the spongy bones. The same state exists in the scapulæ and sternum; their configuration is irregular, they are shortened, swollen, and thickened, and curved on the flat sides. The head is generally voluminous, the cranium thickened, principally on the sides. All the bones of the face form by their exaggerated development more acute angles, more marked prominences and projections in their curves than natural. The relations of proportion in all parts of the osseous system are altered; the entire skeleton, as well as the individual bones which compose it, present a diminution in length and breadth, and exhibit an arrest of development. Thus considered in the skeleton, rachitis evidently consists in a general affection of the osseous tissue, which occupies all its divisions, and spreads through all its parts, characterizing itself externally by the general tumefaction of the epiphyses and spongy bones, the curvature of the long bones and spinal column, the change in all the surfaces, which gives to the osseous tissue an appearance of thickening, as if all the parts composing it had been inflated, distended, and softened by the presence of a foreign substance, and an appearance of general deformity, as if the weight of the upper parts of the body and muscular contraction had continually exerted their influence according to the direction and proportion of their action.

In the living body, the same prominences and alterations remarked in the skeleton, can be more or less distinguished; the countenance is marked, the cheek bones very prominent,

and the features drawn. The face looks older than the person really is; the eyes well opened, sharp, and bright; the alæ nasi dilated; the mouth wide and smiling; the head appears sunk between the shoulders; the chest is narrow, confined, flattened or depressed laterally. The clavicles, in order to permit of the shoulders approaching each other, have their curvatures increased; the trunk and limbs are thickened; the articular extremities, particularly the ancles and wrists, are enlarged: all these parts appear as if locked in one another, and as if checked in their development, which has caused our predecessors to say, that the ricketty were *knotted.* The whole person is abridged and stunted; the skin is generally dull and of an earthly hue; that of the face is sometimes pale and a little livid; sometimes, however, it is fresh-coloured and a little copperish; this last peculiarity is principally remarked in children in the comfortable classes of life, where the disease is only developed in a slight degree, as for instance, in the deviation of the knees, or the curvature of a single limb, unaccompanied by any very marked reaction. In all the rest of the body, the skin presents a pale dull colour, with numerous wrinkles in the depths of the concavities of the curvatures, and on the swollen articulations; the hair is most developed along the spine; the muscular system is ill developed, the muscles short and as if suddenly arrested in their growth. The motions of the person are confined and difficult; walking painful, wadling, and often quite impossible; the afflicted are not able to support themselves on their limbs; the respiration is short and laborious, not thoracic, but diaphragmatic or abdominal; the abdomen is large, distended, but not painful; the skin warm and moist; the affected person perspires much, principally on the abdomen and head, and most during sleep; the perspiration is remarkably acid; the appetite is weak, but thirst is considerable; digestion is impeded; there is almost always diarrhœa, and when it disappears it alternates with constipation, and returns again with the greater violence; the stools are serous, the

urine abundant and very slightly coloured; the pulse is small and frequent, as if frebrile; the impulse of the heart is feeble; the intellect is generally sharp and advanced; sensibility is great; the subjects of this disease weep for the slightest cause, even although there is not anything particularly grievous; the bones of the limbs become fractured incompletely and bent with the greatest facility; and it sometimes happens that muscular contraction is sufficient alone to bend them.

Such is rachitis, regarded alone in its external form, in the skeleton and in its general characters in the living being. This offers only its fully developed form. We now come to speak of its mode of invasion; its progress; the periods and degrees of the disease, and the pathological changes in the bony tissue which determine its immediate character, with their modes of association and development, such as nature has exhibited them to me, and such as I have observed in the researches which I have made on this subject.

II. MANNER OF INVASION AND OF DEVELOPMENT OF RACHITIS: RELATIVE INFLUENCE OF AGE, SEX, AND THE PARTS WHICH IT AFFECTS.

Rachitis, properly speaking, is a disease of childhood. It is rarely seen in the fœtus, and most frequently occurs about the age of eighteen or twenty months, rarely after the age of puberty. In 346 cases, which I examined in this point of view, the disease commenced as follows:

Before birth	3	cases.
In the course of the 1st year	98	„
„ „ 2nd „	176	„
„ „ 3rd „	35	„
„ „ 4th „	19	„
„ „ 5th „	10	„
From 6 to 12 years . . .	5	„
	346	

It attacks either sex nearly equally. In the 346 cases there were 148 males, and 198 females.

The knowledge of these two sets of facts, relative to the influence of rachitis on age and sex, presents two valuable characters for establishing that certain diseases and many deformities of the vertebral column, which have been attributed to rachitis, belong to totally different causes. Thus, all kinds of softening of the bones in adults, and all deformities which occur almost exclusively in young women towards the age of puberty, are not caused by rachitis. The truth of these conclusions will be better seen as the real characters of the disease are made known.

Mode of Invasion and Development Stages.—It must not be imagined that rachitis only commences at the period when deformity is first seen in the bones. This manifestation of the disease belongs to a secondary order of symptoms; for it is announced by general phenomena, more or less violent, and which are never absent except when the disease is very little marked. These are derangements of the gastro-intestinal tube, diarrhœa, flatulent distention of the abdomen, night sweats, feverishness, a feeling of lassitude, and a marked sensitiveness of the whole osseous system. The person affected becomes melancholy, morose, the features become changed and vacant; the muscular system loses its consistence, and there appears an indistinct general morbid cause, which affects the whole person, mental and bodily, and which as yet gives no external manifestation, except by these general phenomena. Towards the end of this first period, which I call the period of *incubation* of rachitis, or of *effusion*, as shall be shown farther on, the articular extremities become swollen; as yet there is no curvature, and it is possible that this may not take place during the whole course of the disease. I have seen many examples of general rachitis very well marked, in which the long bones and the vertebral column have preserved a remarkable degree of straightness. Swelling of the epiphyses, reduction in length in the long

bones, have been the sole physical characters of the disease which may have passed through all its periods without having curved the bones of the limbs or of the spine; however, this is far from being generally the case, the deformity of the skeleton almost always succeeding immediately to the period of incubation.

The duration of the stage of incubation is from two to six months; I have seen three children in whom this stage had been nearly imperceptible, the bones having become curved without their health having been noticeably affected; such examples are rare. In the great majority of cases, the phenomena characteristic of the stage of incubation are most manifest; however, it is necessary not to mistake the effect for the cause; the greater number of rachitic children have been ill nourished, lodged, and deprived of pure air, and these insalubrious conditions have developed in them a state of languor, of disturbance, or of irritability in the digestive organs. The true signs of the stage of rachitic incubation are the night perspirations on the abdomen and head, the clamminess and swelling of the abdomen, diarrhœa without colic, a moist heat on the skin, a constant and uniform feverishness; finally, great sensibility of the osseous system, and disinclination of the patients to sustain themselves erect.

The stage of deformity usually commences by swelling of the ankles, knees, and wrists; these joints acquire double their ordinary volume, they appear knotted, and between their surfaces of junction, for example between the bones of the carpus and those of the fore-arm, the leg, and the foot, the skin forms a deep fold, which shows the exceeding development of the articular extremities and their want of actual contact. Soon after this, the bones of the legs became curved, the knees retreat from one another, the thighs, hips, thorax, vertebral column, and other parts of the skeleton participate in the general deformity, whilst the local symptoms become more and more marked, the general symptoms increase in a sensible degree. The abdomen remains large; a quantity of gas accumulates in it, and

some fluid appreciable to percussion. The diarrhœa continues, and often increases, the urine and sweat become more and more copious; the respiration frequent, laborious, and altogether abdominal; the fever is characterized by a sensible warmth of the skin, and an uniform acceleration of the pulse, such as is observable in the continued fever of consumption. The sensibility of the osseous system increases, the patients are easily made to weep, by any one slightly pressing their limbs; all the functions languish; the constitution becomes deteriorated, the complexion disappears, the muscular system becomes enfeebled; standing and walking become impossible, and are suspended during the greater part of this stage; at the same time that the deformities of the osseous system increase, the disease arrives at its greatest degree of intensity; this stage lasts from one to three years, and it is during this time that we see deformity occur successively in the different parts of the skeleton. This deformity is not always general, or at least it is not perceived in all parts of the osseous tissue; for example, sometimes the disease confines itself to swelling of the epiphyses, and particularly to swellings of the articulations of the knees, ancles, and wrists, sometimes to deviation of the knee, sometimes to curvature of one leg, and sometimes to that of both at once; sometimes to tumefaction of the epiphyses, with flattening of the chest or curvature of the spinal column. I have seen all these combinations.

Degree and Order of Succession of Deformities.—It is a subject worthy of inquiry, to know in what proportion, and under what circumstances, these different deformities appear, with the order in which they are developed. The following is the result of my observations:

In 496 cases of rachitis, there were,

With general symptoms and swelling of the joints without curvature, ...	11	cases.
With deformity of the lower extremities, and swelling, more or less marked, of the wrists, .	485	,,
	496	

In this number there were simultaneously,

Deformities in the length of the upper extremities,	14	times.
Do. do. in the spinal column, .	48	„
Do. do. in the thorax, . .	59	„
Apparent increase in the skull, ...	7	„

Whence it follows, that rachitis is seldom confined to the increase of the epiphyses, without curvature of the shafts of the bones; that the upper extremities shew their participation in the disease, by the swelling of the wrists, but that they are rarely deformed; that the lower extremities are almost always deformed, and that the deviations of the spine are to the deformities in the lower extremities in the proportion of about 1 to 10. The proportion of deformities of the thorax is a little higher, and the development of the skull a little less frequent.

With regard to the order of succession of these deformities, they appear as follows: swelling of the epiphysis of the lower extremities, deviations of the knees, curvature of the tibiæ and fibulæ of the femur; then swelling of the wrists, and, either at the same time, or consecutively, deformity of the pelvis; then swelling and deformity of the ribs of the scapulæ, the clavicles and deviation of the spine; the increase of the skull and swelling of the bones of the face, have always the last place. This order of succession is incontestible. In forty-two cases which I have observed, and followed for many years in Paris, the disease manifested itself forty-one times, by swelling of the articular extremities and curvature of the lower limbs; in one case only the affection appeared to commence by deviation in the spine.

The time intervening between the development of deformity of the spine or of the thorax, and that of the lower limbs, varies from one to three years; however, in the majority of cases, the deviation of the spine has shewn itself about a year after that of the limbs. But it is an unquestionable law which hardly admits any exceptions, that rachitis proceeds in deforming the skeleton from below upwards, and that the deformity of the spine is

the last to manifest itself. These observations on the order of development of rachitic deformities, are confirmed by others, viz., that the degree of these successive deformities is ordinarily proportioned to their order of manifestation; thus the bones of the legs are ordinarily more deformed than those of the thighs; those of the thighs, than those of the pelvis; then nearly on the same line, came those of the spinal column and of the bones of the skull. The deformities most important to mention, in relation to succession and degree, were those of the bones of the pelvis, besides, I have remarked, that deformities of these bones were always accompanied by deformities of the bones of the lower extremities, and that the degree of deformity of these latter, approaches to the degree of deformity of the bones of the superior extremities, which sufficiently proves the degree of deformity in the bones of the pelvis: whence it follows:—

1st. That every rachitic deformity of a portion of the skeleton, implies the deformity of those which are placed below it; thus that of the spine, implies that of the pelvis; that of the pelvis, that of the femora, &c.

2nd. That the degree of each deformity, is proportioned to the order of succession to which it is subjected, that is to say, that the degree of deformity diminishes from below upwards.

3rd. That every isolated deformity of the superior portions of the skeleton, of the vertebral column, for example, when there is no deformity of the parts situated below, is not owing to rachitis.

When the patients have arrived at the termination of the stage of *deformity*, a third order of phenomena appears, constituting a third stage of rachitis, a period which I have named, that of *resolution* or *consolidation*. This stage is announced by the gradual diminution of the symptoms belonging to the preceding stages. Thus the pulse looses its frequency, the diarrhœa diminishes, and even ceases altogether; the abdomen gradually looses its hardness and volume; the urine is less in

quantity, and higher coloured; the perspirations are much decreased, and it is principally by this symptom that it is made known that the disease has arrived at the stage of resolution or consolidation. The skin is less warm and moist, and recovers its ordinary colour; the face is no longer drawn, and the complexion improves; in a word, all the functions successively recover their activity; digestion, respiration, circulation, increase, and become regular; the muscular powers return, and the patient, more confident in himself, and freed from that sensibility and feebleness in the limbs, characteristic of this disease, again begins to exert himself in walking and standing, frequently after his capability so to do having been a long time suspended.

This stage of rachitis, presents also on the part of the osseous system, a phenomena not less important to remark. The epiphyses decrease sensibly in volume: sometimes in the space of two or three months, a diminution of from one to two inches, is remarked in each knee. The complete resolution of the epiphyses can thus take place by the efforts of nature alone. It is not so with the deformities of the skeleton, for, although they often diminish of themselves, they rarely completely disappear without the aid of mechanical means; I have, however, observed many examples of spontaneous recovery of curvatures of the limbs under the influence of general constitutional treatment; but the most frequent circumstance is, particularly when the curvatures have been carried to a certain degree, the continuance of the deformity, and the consolidation of the bone in its abnormal form. It is remarkable, that after the stage of resolution, the deformities of the limbs do not increase, but they also cease to diminish spontaneously. The bones which in the preceding stage were soft, and capable of being bent by the slightest application of force, now become hard, solid, and completely inflexible to every application of force; when come to the end of this stage, the patients are, as far as rachitis is concerned, cured, but they retain their deformities.

The termination of rachitis, is not always in complete resolution, some patients, amongst whom the disease has proceeded to a considerable degree, as shewn by the universality and extent of the deformities of the skeleton, preserve during a part, or even during their whole life, traces of the deep disorder, which has stricken their skeletons; in such, rachitis has become chronic. The symptoms which mark this phase of the disease have no longer any analogy with those of the three stages described of the acute affection; there is no fever, nor sensible alterations of any of the principal functions. Chronic rachitis manifests itself by two constant and sufficiently marked symptoms, a lymphatic delicate temperament, shewn externally by a pale livid hue of the skin, and extreme fragility of the bones; this fragility is so great, that it is only necessary to compress certain bones between the fingers, in order to break the external table, which is not thicker than the consistence of a shell. Such are the external phenomena which characterize the three stages of rachitis, viz., that of incubation, deformity, and resolution or consolidation. The knowledge of these phenomena alone, leads us to some general results, many of which are entirely new, and some of which have not been well established; those are as follows:—

1st. Rachitis is exclusively a disease of childhood.

2nd. Rachitis has a stage of incubation, characterized by general symptoms which do not belong to any affection of the osseous tissue.

3rd. Rachitis, considered in its effects on the osseous system, is a general disease of the whole skeleton, but which manifests itself by different degrees, and under different forms in each of its parts.

4th. Rachitic deformities of the skeleton proceed successively from below upwards, from the bones of the leg to the bones of the thighs, and thence to the bones of the pelvis; thence to the upper extremities and thorax; and lastly, to the spine and cranial bones.

5th. The degree of deformity is in proportion to the order of development. The deformity of one part of the skeleton always implies that of other parts situated lower.

6th. Rachitis considered in the development and order of its phenomena presents distinct stages, in which the disease changes more or less in aspect and character.

We shall now pass to the history of another order of facts, the examination of the immediate characters of the osseous tissue, which will serve to better establish the preceding conclusions.

III. IMMEDIATE CHARACTERS OF THE OSSEOUS TISSUE.

The immediate influence of rachitis on the osseous system shows itself in four different ways: by *deformity* of the bones, by their *reduction in size,* by *alteration* in their tissue, and by the *disturbance* of and *arrest* in the progress of ossification. The facts relative to deformities of the skeleton have been always remarked, and there is nothing to add worth speaking of to the general indications which I have formerly given. We will return to that subject when giving a particular detail of the different kinds of deformities produced by rachitis. We shall now pass immediately to the three orders of facts, viz., *the reduction in dimension of rachitic bones, alterations in their tissue, and to the influence of rachitis on the progress of ossification.*

A.—Reduction in Dimensions of the Bones.

I collected a certain number of skeletons, presenting evident traces of rachitis; those contained in the Museum Dupuytren, in the Maternité, and Clamart, which I compared with many others which I possess. I measured with the greatest care the relative dimensions of the bones of the upper and lower extremities, and compared them with the length which they present in the healthy state; also the comparative dimensions of the other bones of the skeleton, the pelvis, vertebral column, scapulæ, claviculæ, and sternum. The results were:

1st. That the greater number of the bones in the rachitic skeleton, when compared with the bones of the healthy skeleton, appear to have been suddenly affected with an arrest of development in proportion to their several dimensions.

2nd. That this reduction, independently of that which results from deformity in the bone, may be carried so far as to be only one-half of the ordinary extent of the bone.

3rd. That this reduction is almost always in constant proportion to the order followed by rachitis in its development; besides this, the diminution of the bone is generally greater in proportion as the part is situated low down in the skeleton, and that this diminution is less marked as we advance from below upwards.

4th. That the diminution or reduction of the lower extremities, relatively to those of the superior, serves to establish that rachitis is capable of perpetuating by an arrest of development in the lower limbs easily seen, the relations which exist between the superior and inferior extremities and their appendages at the period when the disease commenced.

These different conclusions agree rigorously with the numeric calculations which I have made.

To form a comparison, I have taken exclusively the skeletons of rachitic females, in order to obtain more rigorous proportions, and in order to apply those calculations practically to all which concerns the measurement of the pelvis.

Thus in thirteen rachitic skeletons of females, the average length was:

	Rachitic Bones.	*Normal Bones.*	*Difference.*
1. Fibulæ, . . .	9 inches 5 lines.	13 inches 2 lines.	3 inches 9 lines.
2. Tibiæ, ...	10 „ 1 „	13 „ 6 „	3 „ 5 „
3. Femora, . . .	10 „ 11 „	14 „ 0 „	3 „ 1 „
4. Radii, ...	6 „ 8 „	8 „ 4 „	1 „ 8 „
5. Ulnæ, ...	7 „ 6 „	9 „ 3 „	1 „ 9 „
6. Humeri, . . ,	8 „ 11 „	10 „ 6 „	1 „ 7 „
7. Claviculæ, . .	5 „ 2 „	5 „ 8 „	0 „ 6 „
8. Sterni, . . .	5 „ 0 „	5 „ 5 „	0 „ 5 „
9. Spina, . . .	20 „ 11 „	22 „ 0 „	1 „ 1 „
10. 3 drametres of the Pelvis, .	11 „ 9 „	13 „ 6 „	1 „ 9 „

This comparison of different parts of the skeleton shews not only that the diminution of rachitic bones is greater from below upwards, but that this reduction takes place in each of the diseased bones, compared with corresponding bones in the healthy skeleton, according to a sufficiently regular series of numbers, as is seen in the following averages extracted from my first table:

Fibula 28 inches, 100.	Radius 20 inches, 100.	Clavicles 9 inches, 100.
Tibia 25 „ „	Ulna 19 „ „	Sternum 8 „ „
Femur 22 „ „	Humerus 15 „ „	Spine 5 „ „

Three diameters of the pelvis 17 inches, 100.

Thus 28, 25, 22, 20, 19, 15, 9, 8, 5, is the formula of the decreasing ratios of the rachitic bones from below upwards.

Whence it follows:

1st. That the reduction of rachitic bones follows the same law as that which causes their deformity, successively from below upwards and gradually from above downwards.

2nd. That the dimensions of a rachitic bone being known, the dimensions of other parts of the skeleton may be very nearly determined.

3rd. That the reduction of the three diameters of the pelvis in rachitic females, follows the reduction of the dimensions of its component parts, and that the degree of this reduction is intermediate between the degrees of reduction in the femur and humerus.

With respect to the proportion existing between the length of the superior and inferior limbs when affected by rachitis, considered as perpetuating the proportion existing at the time of the invasion of the disease, it is a fact as incontestible as the preceding. I have shown, that the majority of cases commence at the age of from eighteen months to two years; besides, from a calculation in table No. 2, of the comparative lengths of the superior and inferior extremities at that age, I have found that in the well-formed infant of two years, the length of the upper extremity is to that of the lower as 1 to

1·34. This proportion in the rachitic adult is 1·35, whilst in the healthy adult it is 1·46. It is plain, therefore, that in this case, rachitis, acting as the cause of the arrest of development, produces effects analogous to those produced by causes which prevent the evolution of the organs in the fœtus; that is to say, it produces a fixed state of the stage of development, corresponding to the time of the arrest. There can be no necessity here for my giving physiological reasons for the relative inferiority of the lower limbs in the child of tender age; it is a fact so well known in science, that it only needs being cited to be received with all the authority of a fact which had been demonstrated.

Hitherto I have not considered the reduction of rachitic bones, except when in the most fully developed state in adult skeletons. Because this fact, observed at a period distant from the disease, might be considered as a consecutive effect of its influence, and not as one of its direct characters; and this is more likely on account of some authors having denied the existence of an arrest of development in the bones in this disease. To resolve this difficulty, and to give my observation all precision possible, I applied the most accurate measurement to different parts of the skeleton of rachitic children, and repeated it from distance to distance. Thus, I took the dimensions of the bones of the legs, of the thigh, the fore-arm, the arm, the spine, and of the entire stature, and repeating these measurements at many months' distance, I acquired the knowledge of this double fact, viz.:

1st. That children attacked with rachitis from about the age of one year are smaller in stature, and have all the parts of the skeleton generally shorter than healthy children of the same age.

2nd. That during the two first stages of the disease the increase in length of the bones is completely arrested in a great number of cases; in others it continues but in a manner sensibly slower, and more remarkably slower in the inferior than in

the superior extremities. In some cases children attacked by rachitis in a marked degree, have ceased to grow for eight or ten months; and others who have continued to grow have done so in a manner scarcely perceptible. Finally, in comparing the degree of increase in the inferior extremities with that of the superior, I have observed cases in which the superior extremities alone had continued to increase, whilst the lower remained stationary; but I have never seen the reverse. This default, or simply this cessation of increase in the length of the bones in rachitic children, appears to be subject to the influence of the degree in which the disease is developed. Where the disease was very decided the growth was completely suspended; when in a less degree, the growth was only diminished. The manner in which this fact agrees with the termination of rachitis confirms still more its subjugation to the direct influence of this disease. Thus, as soon as the stage of consolidation or of resolution has commenced, the growth of the bones in length begins again, but always with less activity than in those who never have been affected by rachitis, and this slow growth continues until the skeleton ceases to be developed, so that the total decrease in the long bones of rachitic adults is the sum of two causes, one the total or partial arrest of development during the existence of the disease, the other the diminution of increase when the disease has ceased. To the degree of the affection as a cause of arrest of development, it is requisite to add the period at which the disease occurs, for those rachitic persons who have remained smallest are those who have been attacked with the disease at the more advanced ages of five, six, or seven.

I have remarked that, in these individuals, the bones had less tendency to become curved, and the disease shewed itself principally by the swelling of the epiphyses and the shortening of the long bones.

My observations with regard to shortening of the long bones may be summed up as follows:

1st. Most of the bones of the rachitic skeleton are always relatively less developed in length and breadth than the bones of the normal skeleton.

2nd. This reduction, independent of that which results from deformity, may be carried to the extent of half the normal dimensions.

3rd. The reduction in size of rachitic bones follows the same law as that of their deformity, successively from below upwards and gradually from above downwards.

4th. The decreasing ratio of rachitic reductions from below upwards, is represented by a regular series of numbers which permits, the dimensions of one bone being known to determine very nearly the dimensions of the other parts of the skeleton.

5th. The decrease or reduction in the three diameters of the great pelvis follows the reduction of the parts composing it; the degree of this reduction may be calculated by the mean of the reductions of the femur and humerus.

6th. The greatest reduction of the inferior extremities, compared with that of the superior, establishes between these parts relations of length which repeat and exactly perpetuate those of the age when the disease was developed.

7th. The reduction of the bones in rachitic adults is the compound result of the arrest of development in the osseous system under the direct influence of the disease, and of the slower growth which occurs after the disease has ceased.

8th. The reduction or decrease in size of rachitic bones is a general character, and as constant in this disease as deformity of the bones.

B.—Alterations in Texture in Rachitic Bones.

This is a subject on which anatomists have been long occupied; but of all the authors who have written on the subject, no two are found to agree. This diversity of opinions has appeared to me to be a proof of the want of exactness in the

greater number, and I think has arisen from rachitis being considered as an affection of the same kind through all its stages and epochs of development, and the want of consideration of whether it be in its chronic or acute stage. In opening a rachitic bone they think that the alteration which they see there is the only fact worth recording in the disease, and if this appearance be unlike preceding observations, the latter are declared to be controverted, hypothetical and looked on as though they had never happened. However the alterations in tissue in rachitic bones have their stages, commencement, degrees, periods, and termination. Inseparable from the disease, of which they are only a partial manifestation, they follow the course of its development, commence, increase, diminish, disappear, or perpetuate themselves with certain appearances, which vary like the other characters and the other symptoms of the affection which produces them.

Having examined a great number of rachitic bones, I feel convinced, that the alterations of texture which they present, are positively, according as they belong to one or other of the stages, or to the chronic or acute state. I shall now indicate the different alterations peculiar to each of the stages of the disease, which I shall combine into two categories, the first comprehending all the periods, stages, and degrees of acute or recent rachitis, the second all the stages and degrees of the disease when chronic.

(*a*) *Texture of the Bones in acute Rachitis.*

1st. *Alterations of Texture peculiar to the Period of Incubation.*—It is very difficult to procure bones belonging to this stage of the disease: first because the skeleton as yet exhibits no deformity; and secondly, because the disease at this period does not appear capable of causing death; however, it is not uncommon for children affected with so debilitating an affection as rachitis, to die when attacked by some other acute disease, such as pneumonia or acute hydrocephalus. The difficulty in

these cases is, to distinguish the symptoms which are peculiar to rachitis from those which are proper to the disease, which become as it were mingled with it. These symptoms, amongst other phenomena less marked and less important, are a diarrhœa already chronic, night sweats increased, sensitiveness of the limbs, dislike and difficulty to sustain themselves on their limbs, and lastly, a slight swelling of the articulations. Besides these, it is not uncommon to find in those subjects, in whom the lower limbs have already suffered from the deformities incident to the second stage of rachitis, that the bones of the upper extremities, the humerus particularly, have only reached to those alterations peculiar to the period of incubation. The alterations consist in the following; when a section is made longitudinally of a rachitic bone in the first stage, we find a considerable quantity of sanguinolent matter effused in the medullary canal, and to the summit of the epiphyses, distending the areolæ of the spongy tissue. This matter is not of a brilliant red, like ordinary blood, but of a much deeper shade. On pressing the cells of the epiphysis, the effused fluid pours out in abundance. A close examination proves, that a considerable quantity of this matter is contained between the periosteum and the most external layer of the bony shaft, and also between the medullary membrane and its most internal layer. A third fact most important to remark is, that the fluid is also present between the different layers of the compact tissue. This latter fact can be seen by the unassisted eye, for the section of the bone is marked by a series of parallel lines, more or less continuous, reddish in colour, and owing to the effusion of this sanguinolent fluid. This pathological appearance is more easily appreciated by removing first the periosteum, then the different layers of compact tissue, which are very easily detached; by this means an entire stratum of this effused fluid can be laid bare between each of the lamellæ, so as to study its characters. At first it is of a watery consistence, capable of being washed away, by water being poured on it, and

disappearing on desiccation; its characters are the same in all the situations where it is found. At a more advanced stage, the same substance gives place to a collection of gelatinous matter, which becomes organized like false membrane, full of myriads of small vessels which form a dense lacework by their numerous inosculations. These vessels can be seen, when magnified, only twenty-five diameters; when arrived at this degree of organization, the effused fluid becomes adherent to the surfaces with which it is in contact, and it cannot be removed from these by washing. The periosteum is manifestly injected and a little thickened; injection forced into the capillaries shews most numerous arborizations, rather more perceptible than in the healthy bone. The nutritive arteries of the bones are remarkably developed, and the effused fluid is very abundant in the fork of their principal divisions. The medullary membrane is sometimes thickened, but less frequently and less perceptibly than the periosteum. The compact tissue of the bone is not as yet sensibly softened, although it will not break as easily or as completely as in the normal condition; the concentric lamellæ, already separated from one another by the effused fluid, can be easily removed from one another; when dried, they exhibit a multitude of little apertures more marked and more appreciable according as the lamella is nearer to the periosteum, the cells in the spongy tissue are dilated, and a large number of them are found reunited, as if their parietes had been destroyed by the fluid having been effused in too great abundance.

The alterations just described belong principally to the long bones of the tibiæ, fibulæ, femora, and the bones of the upper extremities; those which occur in the spongy or short bones, are analogous. Thus in the first degree of the stage of incubation, the bones of the pelvis, the scapulæ, and sometimes even the cranial bones, are the seat of a remarkable bloody effusion, which considerably distends and enlarges their cells. The same occurs in the bones of the ankle, wrist, and of the vertebral bodies; however, the effusion appears proportionably less abund-

ant in the last bones than in the long bones and their epiphyses.

Such are the proximate characters of the osseous tissue in the first stage of rachitis; they may be summed up in a single fact, viz. general effusion of blood, which has become less clammy and consistent than natural, which infiltrates all the interstices of the osseous system.

2nd. *Alterations of Texture in the second Stage of Rachitis.*—On opening the long bones in this stage, when the deformity is sufficiently marked, but yet recent, we see a spongy mass at the union of the epiphysis with the shaft of the bones composed of a very fine network, close, consistent, and elastic, which does not result from a transformation of the ordinary spongy tissue, but which is a pathological addition of new formation; it is placed external to the normal spongy tissue, or in the cells of this tissue itself, but in greatest quantity at the point of junction of the epiphyses with the shaft. This tissue of new formation is not alone met at the extremity of the long bones, its existence is as general as the cause whence it derives its origin.

I have drawn attention to the matter effused in the first stage, through all the osseous tissue, and principally to that which is furnished by the periosteum, and that which is deposited between the concentric lamellæ of the long bones, both of which present evident traces of organization in the numerous vascular ramifications, and in the increase in consistence in the effused fluid. This rudimentary organization is the first degree of the more advanced organization of the same matter, which every where during the first stage of rachitis appeared under the form of a sanguineous effusion; but in the second, assumed this form of a spongy tissue, exceedingly fine, more or less abundant, more or less appreciable, and which arrives at a degree of osseous organization, more or less advanced; for it is possible (the reasons shall be given hereafter) that the same subject should present at the same time in different parts of his skeleton, altera-

tions belonging to various periods of the disease. However, the characteristic type of the alterations of texture peculiar to the second stage of rachitis is the presence of this very fine spongy tissue in all parts of the skeleton, when the disease exists in a sufficiently intense degree; thus the short as well as the long bones, the flat as well as the spongy bones, present this adventitious tissue in variable degrees. The bones of the pelvis, the scapulæ, clavicles, sternum, vertebræ, and even the bones of the cranium, contain more or less considerable quantities of this tissue. It can be discovered by striking these bones in the fresh state, and even when dried: sections of these bones, as well as sections of the scapulæ and ossa coxygis, present ordinarily a much greater thickness than in the normal condition. It can be seen distinctly, that this excess of thickness is owing to the presence of a bed of spongy tissue of new formation, which is usually interposed between the periosteum and the bone; this layer can be easily distinguished in the old bone by its cells being finer, denser, less resistant, and of a lighter colour than the rest of the bone; besides, it can be separated with the greatest ease. In the dry state, this tissue, to which I have given the name of spongoid (spongoide) in order to distinguish it from the normal cellular tissue, retains the appearance of a contracted layer of yellow colour, forming a contrast with the natural colour of the bone; this is plainest in the shafts of the long bones.

I have shewn, that during the stage of incubation, the effusion took place between the periosteum and the surface of the bone, between the medullary membrane and the most internal bony layer, and finally between the layers of the compact tissue which thus double, or exfoliate, as I may say. The spongy transformation is still more remarkable there, than in the ends of the epiphyses or in the cancelli of the short or flat bones; this exudation is often so abundant, that it causes a separation of many lines between the periosteum and the bone, and by doubling the layers of compact tissue, forces this latter

in on the medullary canal, which it considerably diminishes, and sometimes completely obliterates. This effect is principally observed when the bones are curved, it takes place remarkably at the concave side of the curvatures, whilst on the convex, the lamellæ of compact tissue continue to be close, and the periosteum is immediately applied to the bone; this difference between the convex and the concave sides of the curvatures consequent on the presence of the spongy tissue, appears to be caused by the circumstance of the effused matter not being able to lodge itself between the layers and the periosteum of the convex side, and its being forced by the compression of the laminæ of the convex side, to flow between the laminæ and periosteum of the corresponding concavity; there this matter can accumulate without difficulty, and be replaced by the spongoid tissue; a layer of it is frequently found between the periosteum and the bone, of three or four lines in thickness. In this case the periosteum becomes the seat of an extensively increased vascularity, and acquires greater density and consistence; nothing can prove this better than by comparing the periosteum of the concave with that of the convex sides of these curvatures; on the convex sides it is nearly natural, whilst on the concave it is evidently hypertrophied, and the spongy matter is with difficulty separated from its surface. This disposition is presented in its greatest degree, in the apices of those angular curvatures which certain long bones, as the humerus and femur, sometimes exhibit.

Whilst this effused matter acquires the characters which I have just indicated, the osseous tissues, properly so called, present some modifications of consistence and of structure which it it not less important to remark.

The long bones are bent very easily without breaking; the action of the muscles is sometimes sufficient to bend them; the flat bones, as those of the cranium and pelvis, can be depressed by the finger, but for this to be possible, the disease must have advanced to a very great extent: a cutting instrument will divide them, as it would a firm cartilage; when fractures take

place in the long bones, they are never complete, a portion of the shaft has only bent, and the bone is fissured longitudinally. These are but superficial facts, but they are sufficient to prove that the osseous tissue has undergone a certain degree of genuine ramollissement. In examining more closely into the contexture of the bone, other proofs are obtained of this softening; thus the lamellæ which can be unfolded and isolated, can be reduced to filaments which are capable of being twisted and twined in every direction without being broken. When twisted and compressed with some force, a sanguineous fluid exudes. When portions of these laminæ are submitted to the microscope, a vast number of little reddish points are perceived, which, so to say, darken the osseous tissue; these points are principally perceived in the most superficial laminæ of the concave sides of the curvatures. Lastly, when the laminæ are dried, a quantity of little apertures are to be seen in those parts, corresponding to the concavity of the bones, some of which, by their much increased dimensions, attest the proportionate increase which must have taken place in the little vessels to which they gave passage.

All these changes, which give evidence to an alteration in the structure of the osseous tissue, are not alone to be remarked in the long bones. In the flat and short bones, the external table presents analogous modifications; as I have said already, it yields to the pressure of the fingers, it can be cut with the greatest facility; sometimes it is considerably thinned by the multiplication of the external laminæ. It is then beyond dispute, that independant of the formation of a new tissue (spongoide) characterizing the second stage of rachitis, the proper bony tissue undergoes at this period a genuine softening.

With regard to changes of structure, they are no less real but they are somewhat different, depending upon certain conditions which it is important to determine; in the most ordinary cases, the separation and multiplication of the layers by the newly organized product of rachitic effusion, is the only altera-

tion which can be remarked during the second stage of rachitis; this multiplication is the result of mechanical separation, and not of interstitial absorption of the osseous tissue; for the spaces which result from it are almost always exactly concentric, and besides, they correspond to the separation which is observed during the first stage, at a time when there is only a layer of fluid interposed between the lamellæ. In common cases, there is then only a simple doubling of the concentric layers of the shaft, without absorption or interstitial destruction. In a more advanced degree, that is to say, when the effusion has been very considerable, either on the surface of the bone, between the periosteum and first layer, or between the concentric laminæ, the texture of the bone, properly so called, may offer two kinds of changes; one when the laminæ of bone have been considerably removed from one another, and their vascular communications broken and interrupted; in this case the osseous laminæ may separate themselves from the principal layer and fall in fragments, and thus constitute a state peculiar to rachitic bones which I have designated and described, as shall be seen lower down, under the name of *rachitic consumption;* the other when the quantity of spongy matter deposited on the surface of the concavity of the bone, has thrust back the proper laminæ of the bone into the medullary canal, and then the laminæ present a breach of continuity more or less complete at the apex of the centre of the effusion, or only an angular curvature, from which, in one or the other case, may result the extreme curvature of the bone, or even an appearance of incomplete fracture; these modifications are not absolute, but, on the contrary, are dependant on special conditions, and do not explain in every case the general fact of the destruction and disappearance of the true osseous tissue in the second stage of rachitis; this latter result only occurs incompletely, and in an accidental manner, and is connected to an extreme degree of the disease, which explains itself, as shall be seen further on, by consecutive alterations

which agree perfectly with those general characters most frequent in the rachitic osseous tissue.

3rd. *Alterations of Texture in the third Stage of Rachitis.*—In proportion as the general symptoms of rachitis disappear, and announce the period of resolution of the disease, the osseous tissue follows, in its changes, an analogous progress and transformation; the spongy tissue of the epiphyses becomes partly absorbed, and the remaining part acquires consistence and loses flexibility; the fluid which surrounded it disappears by degrees, its cells enlarge and become solid; other changes take place in the shaft, the interstices resulting from the doubling of the laminæ fill themselves with true deposits of the calcareous phosphates; by degrees the lines of separation are effaced, the bed of spongy tissue which had been organized between the periosteum and bone, and between the medullary membrane and bone, becomes transformed into compact tissue, and the whole shaft soon presents the homogeneous appearance of a primitive bone. This transformation can be followed by the naked eye most easily; the interstices of the laminæ fill up, and become close by degrees; the fissures which are first perceived in the section of the cut bone present now only the appearances of very fine lines, marked by the reddish colour of the spongy tissue, of which there now remains but very slight traces; finally, according as the new beds acquire the characters and consistence of compact tissue, it recovers its healthy solidity, and finishes by arriving at an extraordinary degree of hardness and compactness. This state I have marked by the term, *eburnation,* on account of the appearance and hardness then assumed by rachitic bones resembling ivory; whatever may be the force now employed to overcome the curvatures, it will be unavailing without fracturing the bones; this transformation is complete some years after the disappearance of the acute symptoms of rachitis, and still more so, when the patient has advanced towards the adult age, when the constitution has recovered all the attributes of health.

When the whole stage of *resolution* has passed by, the long bones which were much curved, the tibiæ and fibulæ particularly, become flat and assume the form of the blade of a crooked sabre. When divided longitudinally at this period, we sometimes find more than an inch of compact tissue between the concave border of the bone and the medullary canal. This increase of bulk in the compact tissue of the bone results evidently from the transformation of the primitive spongy layers of the rachitic bone, confounded with the layers of the old bone. We can often find traces of this amalgamation of the new and old substance in the longitudinal lines of the bone.

The changes which take place during the third stage of rachitis in the flat, short, or spongy bones, are less remarkable and less absolute. Sometimes the flat bones become very heavy, hard, and compact, and the adventitious spongy tissue has evidently furnished the elements for this hyperosteosis. Thus the pelvic bones sometimes became considerably thickened and hardened. M. Legrand of the Maternité shewed me a pelvis which weighed double that of an ordinary pelvis; its walls had acquired in many parts a thickness and compactness equal to three or four times the normal thickness. I have seen and described many examples in which the parietal bones had acquired three times their regular thickness. When a section is made of the cranium of subjects in this condition, a vast quantity of reddish, small, sandy granulations, very close and dense, are perceived, which preserve still something of the spongoid tissue. The entire diplœ is filled with these granulations, and the whole bone is of remarkable hardness and weight. In the perfectly spongy bones, as in the bodies of the vertebræ and the bones of the tarsus, the characters of the stage of resolution present some distinct differences. Their volume does not always remain increased, nay, it very rarely does so; but their surface is unequal and irregular, full of depressions and projections, which show an old alteration in the consistence of their tissue. In this way the vertebræ are most remarkable; their free sur-

faces are projected or depressed; one would say they had been swelled for a moment, and that being obliged to return into their proper places by the disappearance or absorption of the matter which they contained, that then they had lost their figure and become contracted, in order to fill up the remaining vacant spaces and adapt themselves to them. In all cases they are crushed in front or on the sides to a very considerable degree. With regard to their consistence, it is generally increased. It is often almost impossible to divide the bodies of the vertebræ which have been a long time previously affected by rachitis. Their compact tissue is hypertrophied and formed by a very hard crust of calcareous phosphate.

The periosteum at this period is strongly adherent to the bones: it has recovered itself; it is no longer thicker or more vascular than in the normal condition, except perhaps on the concave side where it preserves sometimes a greater degree of consistence.

Such are the alterations of texture observed in the three stages of rachitis in young subjects, and these form the immediate characters of acute rachitis.

(*b*).—*Texture of the Bones in old or chronic Rachitis.*

The texture of the bones in chronic rachitis exhibits two distinct conditions, according as the disease may have been completely resolved, and may have left no traces except malformation of the skeleton, or according as the texture of the bones may present alterations, which have continued after the disappearance of the symptoms of acute rachitis.

In the first case the texture of the bone continues to be that which I have designated in the third stage of acute rachitis, under the denomination of *eburnation*. The texture of the shafts has acquired in fact the hardness and denseness of ivory. The whole compact portion of the long bones offers, notwithstanding marked curvature, an homogeneous and exceedingly compact mass which may be considered as the complement of

the state which I have attributed to the third stage of acute rachitis. The only difference which exists between chronic and acute eburnation consists in the rarefaction of certain parts of the bony tissue. In fact, old rachitic bones, which had been perfectly consolidated, exhibit at the end of their epiphyses, and in the cellular part of their shafts, large cells which give evidence of the absorption of certain parts, and, moreover, the shafts of the long bones which remain curved become flattened, as if pressed together. Excepting this difference, chronic eburnation presents the characters of recent eburnation when fully accomplished, that is to say, the eburnized part of the shaft is of exceeding hardness, so as with difficulty to be divided by the saw.

When the resolution of rachitis has not been complete on account of the intensity of the disease, and when, in consequence of a very considerable effusion there has been an extreme distancing and doubling of the lamella of the compact tissue and excessive dilatation of the areola of the spongy tissue, the osseous structure has passed into that state which I have denominated *rachitic consumption*. In this state the exterior bed of bone, principally that of the epiphyses and flat bones, is reduced to a very thin pellicle, transparent, fragile, and yielding to the slightest pressure of the fingers.

The entire space circumscribed by this kind of osseous shell is filled by large cells, which appear as though formed from the union of many cells. In these the debris of the broken up laminæ float more or less freely in the midst of a fatty marrow of yellow colour, and tinged in many parts with red spots. These cells do not alone occupy the spongy bones and the extremities of the long bones, but invade the medullary canal of the latter: they are sometimes filled with fat and sometimes with masses of laminæ, or perfectly isolated plates of bone which appear not to have any adherence to the shaft. When these bones are dried they are reduced to a very thin fold, demi-transparent, and very fragile, although they have been always

bathed with an oily fluid. The laminæ which were plunged in the medullary substance become as if half enrolled, and very thin and fragile. With the compact tissue they have very incomplete attachment. This alteration is not always so well marked nor so general: often the epiphyses alone are attacked by it, and the middle part of the shaft is eburnized: at other times the epiphyses and shaft present the disease at the same time to a very marked degree, and the slightest violence will break the bone. According to the existence of one or the other of these two states, the bones are said to be affected with *complete* or *incomplete rachitic consumption.*

The mechanism of rachitic consumption appears to me to be very simple, and consists solely in considerable multiplication of the bony layers to such an extent as to interrupt the vascular communications, and thus cause more or less complete gangrene. We could prove directly this mode of the formation of rachitic consumption during the first stage of recent or acute rachitis. The bones of young subjects attacked by rachitis, to a great degree, shew remarkable exfoliations to their tissue, and to such a degree that the cortical layer of all the bones is reduced to a simple pellicle. I have many skeletons of young subjects in which this exfoliation of the compact tissue is evident. It is easy to imagine, that the parts which have been thus violently separated when resolution has occurred, and when the rachitic effusion remains unprovided with vascular communications, cannot become organized, and necessarily put on the characters of bony tissue, without receiving the necessary elements from the periosteum or the medullary membrane.

The *resumé* of these observations is as follows:

1st. The texture of rachitic bones presents totally different characters, according to the period at which they are viewed, whether it be the stage of *incubation,* of *deformation,* or of *resolution*—different at the *commencement and at the end* of each of these stages; different *according to the intensity of the disease, and the chronicity of the affection.*

2nd. During the stage of incubation of rachitis, an effusion of sanguineous matter takes place in all the interstices of the osseous tissue, in the cells of the spongy tissue, in the medullary canal, between the periosteum and the bone, between the concentric lamellæ of the shaft, between the heads of the bones and the shafts, between the processes and their cellules, in the short and flat bones as well as in the long; in a word, in all parts of the skeleton, and in all the points of the osseous tissue, where the branches of the nutritive vessels are distributed. From this effusion results the doubling of the parts composing the bony tissue, and the increase in bulk, and tumefaction of different portions of the skeleton.

3rd. During the second stage of rachitis, that of *deformation*, whilst the texture of the osseous tissue loses its consistence and softens, this matter which continues to be deposited in all the interstices begins to become organized; it passes successively from the cellulo-vascular form to the cellulo-spongy. This new formation is most abundant between the periosteum and the bone, the medullary membrane and the shaft, between the periosteum and bone in the flat bones, and between the laminæ of these latter.

4th. During the third stage, that of *resolution*, the newly-formed tissue in the long bones and in some of the flat and short bones, passes into the state of compact tissue, and nearly confounds itself with the original tissue which recovers its former hardness. This addition of a new tissue to the old gives a much greater density and increase of volume to those parts of the bone which were the seat of the organization of the new spongy tissue of the prior stage.

5th. In the state denominated *rachitic consumption*, which results from an exaggerated degree of the disease, the doubling and distancing of the parts composing the osseous tissue has been such, that their reunion cannot be effected, and the organization of the effused matter cannot take place. The osseous partitions and laminæ remain apart, and the consistence of the

primitive bone has been reduced to such a degree that the external layer is only formed by a thin pellicle.

6th. The texture of rachitic bones in adults, when resolution has fully taken place, presents a degree of compactness and hardness greater than in the natural state. This is rachitic eburnation, and in it no trace of the reunion of the old and new elements is perceptible.

C.—Influence of Rachitis on the Progress of Ossification.

Those authors who have occupied themselves in endeavouring to discover what may be the influence which rachitis exercises on the progress of ossification, have come to very contradictory conclusions. Some assert that the process of ossification appears to continue exactly as it does in ordinary circumstances; others, that the ramollissement of the osseous tissue was a condition which necessarily retarded its consolidation. This difference of opinion arises from a want of accurate observations, and from observations being made under different circumstances.

To appreciate the influence of rachitis on the process of ossification in a perfect manner, it is necessary to make an examination of the osseous tissue in different stages of the disease, and at periods more or less distant from its invasion. The facts which prove this influence are not all of the same kind; they belong to two distinct categories: the first are relative to the state of ossification properly so called, that is to say, to the transformation of the cartilaginous tissue into osseous tissue; the second to the mode of junction of the epiphyses, and to the degree of soldering of the parts primitively separated and disjointed. With regard to the process of ossification properly so called, it appears difficult at first, from external phenomena alone, to distinguish between the effects of an arrest of ossification and a morbid remollissement. Thus we frequently see the sternum and ribs preserving such a degree of suppleness and

elasticity during the existence of rachitis that they can be easily bent by the fingers; it happens even that the sternum may be bent in two, so as to form a curve from above downwards. Are these results owing to morbid remollissement, or to the effects of an arrest of ossification? I think, to both these causes at once. To be convinced of it, it is requisite to examine the state of the osseous tissue comparatively in rachitic subjects, and in healthy subjects of the same age. This inspection has shown me that, in rachitic persons, during the second stage and at the commencement of the third stage, a much greater number of filaments and cartilaginous bodies are seen in the midst of the proper osseous tissue. These cartilaginous filaments are more easily seen in the bodies of the vertebræ, and the cartilaginous bodies in the midst of the epiphyses. These last appear under the form of little rounded bodies, separated from the principal body, and as if lost in the spongy tissue: their colour is not so fresh and a little bluish; they are but slightly united to the spongy substance; when they are detached with the point of a scalpel, they leave in the place which they occupied, an excavation similar to that left by tubercles in the bones. With regard to the manner and degree of union of the epiphyses with the shafts of the long bones, it is plain that in the rachitic there is a manifest arrest. Separation of the epiphyses is effected with the greatest ease, and during the first stage of rachitis there is found at the union of the epiphyses and shaft a sanguineous effusion, such as is found between the periosteum and the bone, and the compact tissue and the shaft. This phenomenon becomes very perceptible where a rachitic skeleton has been dried: all the epiphyses of the bones of the limbs separate from the shaft with the greatest ease. This disposition accounts well for the separation of the epiphyses, which many authors state that they have observed as a consequence of certain eruptive maladies; besides, it is well known that the blood under such circumstances has lost a part of its plasticity, and it

is under the influence of the same circumstances, as I shall shew farther on, that rachitis developes itself.

Similar effects are remarked in bones primitively composed of distinct parts, as the sternum, ilium, &c.; the parts of these bones appear to unite more slowly than in the healthy state. The parts of the sternum, for instance, shew this effect in the most marked degree. The different divisions remain almost always separate, and this continues during life. This fact can be proved on all the skeletons which present traces of rachitis carried to a great extent. The result of this separation is an abnormal projection of the sternum at the junction of each of its bones. The same effect, only in a less degree, may be observed in the ilium, because the ossification of the parts which compose it is a slow process naturally. But the degree of separation and the facility with which they can be disjoined, renders it impossible not to recognize in them the effects of rachitis.

The aggregate of these two series of facts may be summed up thus: the continuance of a greater number of cartilaginous bodies; the disjunction of the epiphyses; and the tardy reunion of the parts composing the compound bones. All these circumstances attest without doubt an arrest in the process of ossification.

Such is the series of facts forming the purely anatomical history of rachitis. The greatest part of these are new, and are the result of my own personal researches: some of their elements had been pointed out, but in a manner more or less incomplete, by authors who have preceded me. Amongst those I would particularly cite Bichat, Lévaillé, Stanley, MM. Guersent, Rufz, and Dugès, the only persons who have made any remarks worthy attention on the pathological anatomy of rachitis. Thus, Bichat had already observed in the centre of the long bones of rachitic persons an areolar osseous tissue, but he thought that it resulted from the extension and distancing of the osseous fibres.* Lévellé reproduced the same opinion.

* Bichat, Anatomie Generale, édit. de Chandé, t. iii. p. 31.

We owe some observations more precise and detailed to M. Rufz.* This author had already remarked the laminated disposition of the long bones, and the presence of a reddish medullary fluid between the lamellæ, as well as in the cells of the spongy tissue, also the swelling of the epiphyses caused by the presence of the new spongy tissue. But independent of his not having appeared to suspect the connexion of these alterations of the osseous tissue, with the other changes and transformations both previous to and consequent on the different stages of the disease, he has circumscribed in these facts alone, considered in an absolute manner, all the alterations of texture in rachitic bones, by making the mistake of supposing that those alterations which he had observed in a single point in the bones were not general, and it is evident he had formed no idea of the connexion between the fluid effused in the first stage, and the spongy tissue to which it gave origin.

The English author, Stanley, had previously published remarks on the appearances which the long bones present at the termination of the rachitic affection, and whilst describing the extraordinary development of the compact tissue at the summit of the concavity of the curvatures, he attributed it, as did M. Rufz, to hypertrophy of the normal tissue, without referring this transformation of the bony tissue at all to the abnormal changes which had preceded it.† M. Dugés adopted, and partly confirmed the researches of Rufz and Stanley; but we may perceive, that all these authors had only remarked a few isolated points in the pathological anatomy of rachitis, without discovering the origin, connexion, and order of succession of these facts with regard to one another, and even without remarking the general nature of those facts, of which they had remarked some local manifestations. The faults of these authors, according to M. Guerin, is, that they have not generalized.

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* Gazette Médicale, 1834, p. 68 et 69.

† Medico-Chirurg. Transactions, vol. vii. p. 404.

Distinguishing Diagnostics of Rachitis.

The diseases with which rachitis has been a long time confounded, are deformities of the spine, tubercular affection of its bones, and different kinds of ramollissement in the adult (osteomalacie.)

Those deformities of the spine, improperly attributed to rachitis, are all lateral curvatures of whatsoever kind they may be, and posterior curvatures, those principally caused by tubercles; this confusion does not appear possible at the present day, with regard to tubercular affections of the spine, and still it exists in the most recent works which treat on this subject; thus in one treatise on diseases of the spinal marrow, the terms, "*caries of the spine*," "*Potts' disease*," and "*rachitis*" are incorrectly employed to designate the same disease; it is, therefore not superfluous to take notice of these false synonyms.

Lateral deviations of the spine will no longer be attributed exclusively to rachitis, because the greatest number of these deformities are the result of other well known causes, and because the genuine rachitic deviations which are not very common, particularly in the upper classes, are accompanied by characters and circumstances, which cause them easily to be recognized. It is only necessary to recollect, that every rachitic deformity of the spine has been preceded by general or constitutional symptoms, and particularly by deformity of the lower extremities; consequently all deformities of the spine, which want this accompaniment, cannot be confounded with rachitis, at least in the great majority of cases. I have treated on the specific characters of rachitic curvatures of the spine, in a paper specially devoted to that subject, and I now add, that the osseous tissue of spines attacked with lateral curvature, without the external characteristics and relations which I have described, never present those modifications of texture, which are so characteristic of rachitis. The vertebræ suffer no other alterations than those which result from their changes of relation, from the irregular

mechanical efforts to which they have been subjected, including therein the influence of the degree, and of the duration of the action of these influences, and the more general one of the deformity of the spine on the entire economy, and the effect of this reaction on the entire osseous tissue.

Tubercular curvatures, and tubercular affections of the bones, should not be attributed to rachitis, or confounded with it; for these two affections are really very distinct, although they sometimes occur in the same subject, but possessing causes, symptoms, anatomical characters, and general appearances of a very different kind. Tubercular curvatures are never preceded or accompanied by previous deformity of the legs, except in cases where genuine rachitis has existed a sufficient length of time to fully account for it; I have seen a certain number of such cases. The simultaneousness of two affections, so easy to distinguish, does not at all imply the identity of their nature, and the peculiar characteristics of each can in such cases be recognized as easily as if they existed in different individuals. There is no need here to draw the distinctions which result from the considerations of the period of invasion, from the course on the treatment of these two diseases. I shall limit myself, by representing the most prominent characters of the osseous tissue in tubercular affections, which carry in their train certain deformities of the spine; for the bones attacked by tubercular disease are almost always the spongy bones, or the extremities of the long bones. The affection never announces itself by a general character, as in rachitis, on the contrary, it appears only in isolated points of the bones, and the parts which it affects, as the vertebræ and the epiphyses of the long bones, never present the succession of distinct stages, which rachitic alterations do: finally, tubercles, regarded by some, and with good reason, as parasitic bodies, successively invade the different parts of a bone where they are developed, by destroying them rather mechanically than chemically, often leaving the preserved parts of this tissue immediately adjoining the destroyed parts, all their

primitive hardness and texture. Any one may convince himself of this fact, by washing with a full stream of water, the vertebræ which are injured by the presence of tubercles; the remaining portions present nearly the same characters as the natural bone; these particularities are unnecessary to be repeated to those who follow closely the progress of science, but as they are little known to a vast number, I had reasons for establishing with all the precision in my power, that rachitis is anatomically entirely different from tubercular affection of the bones, for in my experiments on the spontaneous production of rachitis in animals, I had apparently very little to change in the conditions of the experiment in order to produce one or other of these affections.

The different kinds of ramollissement of the osseous tissue in adults has, with more appearance of reason, been confounded with rachitis, which is exclusively proper to children. Ever since the publication of the case of the woman Soupiot, the denomination of rachitis has been applied to such. What favours particularly this error is, that the best authors who have described rachitis, such as Glisson, have fallen into it; however, it is clear to me, that these two orders of effections, the *softening of the osseous tissue in adults,* and *rachitis, such as I have described it,* cannot be attributed to the same cause, as they neither have the same characters nor the same symptoms.

I have already shewn, that genuine rachitis is a disease of childhood, from having observed it most frequently towards the age of from eighteen months to two years; that this disease is characterized by a mode of invasion, progress, stages, and alterations of texture peculiar to it; whilst in the different kinds of ramollissement of the bony tissue observed in adults, of which the woman Soupot offers a very good example, there is no analogy between these different terms of comparison. Although I do not intend here to give any detailed account of ramollissement of the bones in adults, having it in prospect to do so

shortly, it shall suffice to call to mind, some principal circumstances of the disease, in order to dismiss it.

Ramollissement of the bones in adults, for which I have reserved the title of *osteomalacie*, is the result of specific causes, as scurvy, syphilis, rheumatism, or of some particular diathesis, as the cancerous; all the subjects which exhibited it presented, before the accession of the softening, general symptoms of some of these alterations; the softening was marked at its commencement by acute and deep pains in the bones; the progress of the disease is slow, it continues a great number of years, sometimes as many as twenty; it does not occur at once in all parts of the skeleton, nor does it proceed from below upwards, but makes its attacks by fractions, so that when one opens a body which has been the subject of it, when only advanced in a slight degree, the bones are found affected in an isolated manner, and even portions of bones perfectly softened in juxta position, with other portions of the same bones, in a perfectly healthy and natural state. I am in possession of many examples of this partial softening, observed in subjects which had died in consequence of cancers of the stomach, breast, or uterus. The details of these cases shall be given hereafter. If the alterations of tissue be closely examined, this alone will be sufficient to prove, that osteomalacie and rachitis are two affections which are essentially different; in the one, the osseous tissue is really softened as if carnified in parts, and no longer preserves any thing of the consistence or texture of the sound bone, but appears as though some fluid, of sufficiently energetic action to cause the disappearance of the calcareous salts, had been formed upon the part, so as to leave nothing but a fibro-cartilaginous web, or even a fleshy one, presenting here and there large areolæ, like the venous sinus of the liver; this web is sometimes pinkish, yellow, reddish, or brownish red, always elastic, easily cut with a knife, but sometimes appearing incrusted with other portions of healthy bone. This description does not always apply, for at a very advanced stage of the disease, it

often happens that the whole skeleton participates in the softening, and there no longer remains, as many authors have shewn, any appearance of the primitive organization of the bones: the termination of osteomalacie, which is always unfortunate, adds another to the features of dissimilitude between it and genuine rachitis.

GENERAL CONCLUSIONS.

1st. Rachitis is a general or constitutional disease of childhood, characterized by the alteration or the perversion, or even the suspension of the work of development and of reparation in the organism, and principally in the osseous system.

2nd. The progress of rachitis, considered as an affection of the skeleton, includes three distinct stages: that of *incubation* or *effusion*, of *deformation*, and of *resolution* or *eburnation*. To each of these periods, corresponding peculiar symptoms belong, and alterations peculiar to the osseous tissue.

3rd. The influence of rachitis on the osseous tissue is shewn by four distinct orders of facts; deformation, alteration of tissue, arrest of development, and retardation of ossification.

4th. Rachitic deformation of the skeleton is developed in succession, from below upwards, from the bones of the legs to the thighs, from the thighs to the pelvis, then successively or simultaneously, the different parts of the upper extremities, the thorax, and lastly, the spinal column and the cranium. The degree of deformity accords with the order of development, whence it follows, that rachitic deformity of any portion of the skeleton implies always deformity of the parts situated below it.

5th. Most of the bones of the rachitic skeleton are always relatively less developed, in length and breadth, than the bones of the healthy skeleton; this reduction, which is independent of deformity, still follows the same law; that is to say, successively from below upwards, and gradually from above downwards; the proportion, according to which all parts of the skeleton are

abbreviated from below upwards, can be expressed by a regular series of numerals, which admits of a very close deduction of the dimensions of the whole skeleton, that of one bone being known.

6th. The maximum reduction of the lower extremities, compared with that of the upper, establishes between them relations of length, which repeat and perpetuate those of the age when the disease was first developed.

7th. The reduction of the bones in rachitic adults is the compound result of arrest of development in the osseous system, under the direct influence of the disease, and of retardation of growth when the disease has ceased.

8th. The texture of rachitic bones presents characters totally different, according as they are observed during each of the three stages, or at the beginning or end of each stage, or according to the chronicity or intensity of the affection.

9th. During the stage of incubation of rachitis, an effusion of sanguinolent matter occurs into all the interstices of the osseous tissue, into the cells of the spongy tissue, the medullary canal, between the periosteum and the bone, between the concentric laminæ of the shaft, between the epiphyses and the shaft, between the points of ossification in the epiphysis and their cells, in the short and flat bones, in a word, in all parts of the skeleton, and in all points of the osseous tissue, where branches of the nutritive vessels are distributed ; from this effusion results the duplication of the parts composing the tissue, and the swelling and puffing out of different portions of the skeleton.

10th. During the second stage of rachitis, (deformation,) whilst the web-work of the osseous tissue loses its consistence and becomes softer, the matter which continues to infiltrate all the interstices of the bony tissue begins to become organized ; it passes successively from the cellulo-vascular, to the cellulo-spongy form ; this adventitious matter abounds principally between the periosteum and the bone, between the medullary membrane and the innermost bony layer, and in the short and

flat bones, between the periosteum and the bone, and between all the laminæ.

11th. During the third stage, (resolution,) the adventitious tissue in the long bones, and in some of the short and flat bones, passes into the state of compact tissue, and appears to become confounded with the old tissue which recovers its former hardness; this addition of a new tissue to the old gives a very great degree of density, and above all, a very great breadth to some parts of the bones, which were the seat of the organization of new spongy tissue in the preceding period.

12th. In that state which I have denominated rachitic consumption, and which results from an axaggerated degree of the affection, the duplication and distancing of the parts composing the osseous tissue has been such, that their union never takes place, and the organization of the effusion does not occur. In this case the osseous partitions and laminæ remain apart, and the consistence of the primitive bone is so much reduced, that there sometimes only remains a thin shell of the external part of the bone.

13th. The texture of rachitic bones in adults, when the disease has ended, presents a compactness and hardness, greater than in the natural state. This is called rachitic *eburnation*, when there is no longer any means of distinguishing the traces of union between the old and the new bone.

14th. Those deformities of the spine, which happen towards the age of puberty, and all those which have not been preceded by deformity of the legs, are not of a rachitic nature.

15th. Rachitis is an affection essentially different from *scrofula* or from *tubercular affection of the bones,* as well as from *all kinds of ramollissement which occurs in adults;* for these latter, the term *osteomalacie* has been exclusively reserved.

No. I.

Comparative Table of the different Parts of the Skeleton in the rachitic and natural State in Females.

Place where found.	Stature.	Fibula.	Tibia.	Femur.	Radius.	Ulna.	Humerus.	Clavicle.	Sternum.	Vertebral Column.	Diameters of the Pelvis.				Measurements of the Skull.		
											Antero-posterior.	Oblique.	Transverse.	Total.	Horizontal.	From one aural Canal to the other passing over the Vertex.	From the nasal to the occipital Protuberance.
	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.
Dupuytren's Museum, 338,	43 6	9 9	11 7	13 0	7 1	8 1	10 0	5 5	5 0	17 0	4 0	4 9	4 7	13 4	19 8	12 4	11 10
Maternite, 335, ...	43 3	7 1	6 6	8 5	4 0	5 3	5 9	4 5	4 5	20 0	1 11	3 11	4 3	10 1	20 9	14 3	13 3
Muette, 24, ...	48 0	11 3	12 1	14 4	7 6	8 3	10 9	5 8	4 9	20 10	2 7	4 5	5 3	12 3	20 0	11 6	11 9
Clamart, 4, ...	45 6	9 6	10 8	10 11	6 4	7 2	9 5	5 2	4 9	26 5	2 7	4 3	5 1	11 11	19 0	12 0	11 3
Ibid. 26, ...	,,	9 9	10 7	10 8	7 7	8 3	9 10	,,	5 9	21 6	2 6	4 9	5 6	12 9	,,	,,	,,
Ibid. 16, ...	,,	11 11	13 2	14 2	8 8	9 9	12 0	,,	5 3	22 6	2 4	4 6	4 9	11 7	,,	,,	,,
Ibid.	,,	10 0	11 2	10 11	7 6	8 3	8 7	,,	,,	20 0	3 7	4 6	5 0	13 1	,,	,,	,,
Ibid. 30, ...	32 0	8 1	9 3	9 11	5 10	6 9	7 10	,,	,,	,,	2 0	3 3	3 3	8 6	17 0	12 10	13 2
Dupuytren's Museum, F.	,,	11 5	12 2	11 6	7 5	8 5	9 7	5 2	6 0	23 3	3 9	5 0	5 3	14 0	19 3	12 4	11 3
Ibid.	37 6	7 11	10 9	10 11	5 4	5 9	7 4	4 7	4 0	21 3	2 9	3 10	4 9	11 4	18 10	12 3	12 2
Ibid. D. 4, ...	35 6	8 9	9 0	9 9	5 9	8 5	8 0	5 2	4 6	20 11	2 7	3 11	4 3	10 9	18 1	12 3	10 9
Ib. described by Dalmas,	35 3	6 1	6 11	7 5	6 2	6 7	6 6	4 11	5 1	20 9	2 10	3 6	3 9	10 1	19 0	13 3	12 8
Ibid.	44 0	10 7	11 2	10 1	7 10	8 2	10 0	5 11	5 8	22 6	2 11	5 0	5 3	13 2	19 9	12 4	12 3
Rachitic average, . . .	40 6	9 5	10 1	10 11	6 8	7 6	8 11	5 2	5 0	20 11	2 10	4 3	4 8	11 9	19 $1\frac{1}{2}$	12 $6\frac{1}{2}$	12 0
Normal dimensions, . .	60 0	13 2	13 6	14 0	8 4	9 3	10 6	5 8	5 5	22 0	4 0	4 6	5 0	13 6	19 0	12 3	11 6
Proportion between the rachitic average and normal dimensions, .	0 $67\frac{1}{2}$	0 72	0 75	0 78	0 80	0 81	0 85	0 91	0 92	0 95	,,	0 8	7 0	,,	1 01	1 02	1 04

Proportion between the Length of the superior and inferior Extremities in the rachitic and well-formed Female.

	Radius and Humerus.	Femur and Tibia.	Proportion.
Rachitic Females, . .	15 7	21 0	: : 1 : 1·35
Well-formed adult do.	18 10	27 6	: : 1 : 1·47

N. B.—To avoid fractional calculations the measurements in these Tables have not been converted into English, which is somewhat less than the French measurements.
S. L. L. B.

No. II.

Table of Dimensions of the different Parts of the Skeleton in the rachitic Child.

Sex and Age.	Stature.	Fibula.	Tibia.	Femur.	Radius.	Cubitus.	Humerus.	Measurements of the Skull.		
								Horizontal.	From one aural Canal to the other, measured over the Vertex.	From the nasal to the occipital Protuberance.
	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.
Girl, 2 years, . . .	18 4	4 6	4 9	5 11	3 6	3 10	4 2	18 6	12 3	12 3
Do. $2\frac{1}{2}$ „	26 6	4 11	6 3	5 6	4 1	4 4	4 3	19	12	12 0
Do. 2 „	19 10	4 5	4 10	5 11	3 4	3 9	4 2	17 9	13 2	13 0
Do. 3 „	17 6	4 8	5 1	4 9	3 7	4 1	3 5	22 2	15 2	14 11
Boy, 3 „	29 6	5 6	5 9	6 10	4 1	4 9	4 8	18 3	12 2	12 5
Rachitic average, . .	22 4	4 $9\frac{1}{2}$	5 4	5 $9\frac{1}{2}$	3 $8\frac{1}{2}$	4 2	4 $1\frac{1}{2}$	19 $1\frac{1}{2}$	12 $11\frac{1}{2}$	12 $11\frac{1}{2}$
Normal dimensions, .	29 1	5 $4\frac{1}{2}$	5 9	6 6	3 11	4 4	5 3	17 6	11 $5\frac{1}{2}$	11 11
Proportion of rachitic average to normal dimensions, ...	0 77	0 88	0 91	0 86	0 95	0 96	0 79	1 09	1 13	1 09

No. III.

Table of Dimensions of the Normal Skeleton in Children of from one to three Years.

Sex and Age.	Stature.	Humerus.	Radius.	Ulna.	Femur.	Tibia.	Fibula.	Measurements of the Skull.		
								Horizontal.	From one aural Canal to the other, measured over the Vertex.	From the nasal to the occipital Protuberance.
	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.	I. L.
Boy, 20 months, . .	25 0	4 0	3 2	3 4	5 0	4 7	4 0	16 0	11 3	12 3
Do. 2 years, . . .	28 4	4 5	3 6	4 0	6 0	5 3	5 0	16 9	11 9	12 6
Girl, $2\frac{1}{2}$ „ . . .	29 0	5 0	3 9	4 2	7 0	5 7	5 4	18 0	11 6	11 0
Do. $3\frac{1}{2}$ „ . . .	35 0	6 3	4 7	5 1	7 8	6 9	6 5	18 6	12 6	12 0
Do. 2 „ . . .	29 0	5 10	4 1	4 9	5 11	6 6	6 3	18 2	11 6	13 0
Do. 20 months, . .	28 0	5 10	4 3	4 10	6 3	5 3	5 3	17 6	10 3	10 9
Average,	29 1	5 3	3 11	4 4	6 6	5 9	5 $4\frac{1}{2}$	17 6	11 $5\frac{1}{2}$	11 11

Proportion of the superior to the inferior Extremities.
Radius and Humerus, 9.2. Femur and Tibia, 12.3. Proportion, 1.34,

ART. XIV.—*On the Development of the Embryo in the different Classes of the Animal Kingdom.* By JOHN SCOULER, M.D.

THE vast accession of new objects with which the animal kingdom has been enriched, has compelled naturalists to study the discriminating characters of each species, with a degree of care and minuteness hitherto unknown. At the same time, this unceasing accumulation of insulated facts required to be generalized and arranged under appropriate categories, not merely to aid the memory, but also to indicate the affinities which the various groups of organized beings bear to one another. It is this search after affinities which constitutes the true philosophy of natural history. The determination of one species from another constitutes merely the differential element of the science, while the investigation of those universal conditions of existence which belong to the whole animal kingdom, forms the integral element which connects and comprehends all subordinate facts and details. The examination of the integuments and other external parts of animals may enable us to seize upon those appearances, which indicate the differences which separate nearly allied species; but it is only by a recondite investigation of the internal parts that we can characterize the various types of the animal kingdom. Thus, amid all the endless variety in the colour of the plumage, or in the form of the mandibles and claws, or of the scales of the tarsi, which enable us to define all the five thousand species of birds described by ornithologists, the general and essential characters of this group of animals are few and simple. A biped mode of progression, a heart with four cavities, constituting them warm blooded animals, and oviparous generation, is the short and simple formula which expresses the essential characters of this numerous tribe of animals, and from which a great number of secondary characters may be deduced.

While the more cautious naturalists restrict their generalizations to the simple expressions of relations and conditions, deduced from a rigorous investigation of facts, others, of a bolder fancy, have proposed hypotheses, which, however startling they may appear, have gained extensive support from their plausible appearance, and from the aid which they afford in grouping together seemingly unconnected facts.

One eminent anatomist has proposed the doctrine which he designates the theory of the unity of organic composition, or, in other words, that every animal is constituted of the same parts, in the same number, and maintaining the same connexions. Others have ventured still farther, and asserted, that as the right and left sides of animals are similar, so, in like manner, the anterior and posterior parts are similar, the sternum corresponding to the spine, and the frontal bone to the occipital. Others, as Spix and Oken, have gone even beyond this, and proposed the hypothesis, that each part is a representation of the whole; that the cranium is a representation of all the bones in the skeleton; and that each bone of the skull is a repetition of all the bones of the head included. In the same manner, it has been taught by Oken and Mr. Leay, that every division of the animal kingdom is a representation of all the others, and, in this manner, we arrive at a principle of universal identity, in which all distinctions and differences are levelled, and nothing remains to the imagination but words perverted from their true meaning.

In the same spirit of generalization, another hypothesis has been proposed, which it is more especially the business of the present paper to investigate. As every part of an animal was supposed to represent the whole, so the history of the development of the embryo was supposed to afford a strong confirmation of these views. The human embryo, from its first appearance as an animated jelly, up to the period of birth, runs through various changes, both in external form and internal organization; and

these various phases of development were supposed to represent some permanent state of organization in the inferior animals. In accordance with this view, the human embryo is successively a zoophyte, a mollusc, a fish, and a reptile; and, on the other hand, these classes of animals may be regarded as analogous to more or less developed human embryos. This hypothesis, which has been defended by Meckel, we shall state in his own words. "The degrees of development which man runs through, from his first origin to the moment of his perfect maturity, correspond to constant formations in the animal series."* The outlines of this idea may be stated in the words of Beclard. "All the phases through which the human organism passes, correspond to permanent states of the animal kingdom. We might accumulate proofs of this important proposition, by drawing a parallel between the different degrees of development of the human fœtus and the degrees of organization of the animal scale. Some examples will suffice. The embryo is at first a little bud or germ, placed in a vesicle; such are some of the more simple worms. Later, it is a little vermiform body, without distinct head or members; this is the case with the annellides. Still later, the members are equal, and the tail projecting; this is the case in most quadrupeds. In the nervous system, we first perceive the nerves and their ganglions; this is the case in all the invertebral animals furnished with nerves. Later the spinal and cranian marrow appears, with the quadrigeminal tubercles of this last, and only the rudiments of the cerebrum and cerebellum; this is also the case in fishes and reptiles. Next, these latter parts augment more rapidly than the tubercles, and the brain is successively that of birds and mammiferæ, until, from the predominance of the cerebrum and cerebellum, it becomes the brain of man himself. We will find, in following the development of the bones, at first mucila-

* Meckel, Manual d'Anatomie, &c. t. i. p. 49.

laginous, then cartilaginous, and next osseous, and consisting of many points of ossification, which are afterwards united; in comparing these developments with the state of the osseous system in the lamprey, in cartilaginous fishes, in oviparous vertebrata, in general, we will find a proof of the proposition increased. It is the same when we pass in review every organ, or every apparatus of organs."*

Although the law of the development of the embryo is in these, as well as in other instances, expressed in rather vague terms, still it would be unfair to infer that by it is meant that the embryo, commencing its existence as a zoophyte, is successively a worm, a mollusc, an insect, and afterwards a fish, a reptile, and a bird. Such a proposition, if advanced in all its generality, would at once be refuted by a simple detail of the external forms and internal structure of the fœtus, during the successive periods of its evolution. The hypothesis may be more correctly enunciated by stating, that each organ, during its progress to maturity, runs through a variety of changes of structure, and the analogies of these fleeting forms are to be found in the permanent conditions of different classes of the animal kingdom. To illustrate the proposition by a few examples, we may state that the successive phases of the nervous system, in the human embryo, are supposed to be, in various periods of its advancement, analogous to the ganglionic system of insects, and then to the brain and spinal marrow of fishes, reptiles, quadrupeds, and mammiferæ. In like manner, the heart and vascular system is, at given epochs, that of a leech, a snail, a fish, and a reptile, and the same law holds good with respect to all the other organs.

If, therefore, there is no parallelism between the total organization of the embryo, at any given time, and the complete assemblage of organs in any given animal, our discussion is

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* Beclard, Anat. Generale, p. 115.

much narrowed; and we must restrict our consideration to the history of the progress of each organ considered by itself; but before entering upon this investigation, the following statements will show that the doctrine which we are opposing must submit to other restrictions, besides the one which we have mentioned.

1. In the first place, it is impossible that the successive phases through which the organs of the embryo pass, can be considered as parallel to the devolopment of the same organs in the animal tribes. This fatal objection to the hypothesis is founded upon the undoubted fact, that there is no graduated scale of being, and that, consequently, the development of each organ is, to a certain extent, independent of that of the rest. If we contrast the growth of the vascular with that of the nervous system, we will find that there is scarcely any correspondence between them. The progress of the vascular system is from the articulated worms, such as the leech, to the mollusca and fishes, while the progress of the nervous system is from the mollusca to articulated worms, and from these last to insects. Under this view of the argument, it is apparent, that if the opinions we are combating be correct, there must be not only development, but retrogradation of organs; that if the changes, as the hypothesis maintains, correspond to an ascending scale of the animal kingdom,—for example, if the heart of the embryo, at any period, agrees in its general characters with that of mollusca,—then, at the same time, its nervous system either resembles that of mollusca, or of articulated animals. In either case, there is a complete want of correspondence with what we observe in the animal kingdom. If the nervous system, under the conditions specified, be that of an articulated animal, then we have contemporaneously in the embryo the vascular system of mollusca, and the nervous system of articulated animals. If the nervous and vascular systems, on the other hand, be at the same period of the molluscan type, then, at a future period, when the embryonic heart and vessels correspond to those of fishes, the more

tardy nervous system may be in the same condition as in the inferior class of articulated animals. In the progress of the respiratory system, we have a more striking illustration of the want of correspondence between the development of an organ in the animal senses, and in the human embryo. The simplest respiratory system in the animal kingdom is that of the zoophytes, in which the tegumentary membrane fulfils the functions of a pulmonary organ. In the class of insects, a beautiful apparatus of tracheæ circulates the air through every organ of the body, somewhat in the manner in which the blood is conveyed by the arteries and veins in other classes of animals. In mollusca and fishes the respiratory process is carried on by means of branchiæ or gills; and lastly, in reptiles, birds, and fishes, we find that lungs take the place of gills. Now, in the development of the organs of respiration in the embryo, we find no fugitive forms corresponding to these permanent conditions. The most ingenious of the transcendental anatomists has never ventured to assert, that at any period the fœtus has its sides penetrated by stigmata, giving off air vessels such as we observe in insects; and no traces of branchiæ have yet been detected in the human fœtus. It is true, that some able anatomists are of opinion, that at an early period of embryo life, vessels are given off from the aorta which are analogous to the branchial vessels of fishes and reptiles; but no branchiæ, or gills, have been detected; and it is as probable, that these supposed branchial vessels are more truly pulmonary branches destined to contribute to the growth of the lungs.

2. As many organs follow no particular law of development in the animal kingdom, we can scarcely expect that such organs should exhibit in the human embryo, analogous forms to those observed among the inferior animals. The history of the teeth and of the sternum affords very good illustrations of this fact. In fishes we find not only maxillary teeth, as in man, but also lingual teeth on the tongue, vomeral teeth attached to the vomer, and palatine teeth fixed to the bones of the same

name. If we ascend still higher in the animal series, we find the teeth instead of becoming more perfect, disappear altogether, as in the tortoise kinds, and even certain mammiferæ, as the whale and the auteater: no such variations have been observed in the human fœtus. If we now consider the teeth according to their complexity of structure, we find that the teeth of the elephant and of gnawing animals are much more composite than those of man, and consequently, if the fœtus ever possessed molars analogous to those of the beaver, the progress of dental development in the fœtus must have been from the perfect to the simple, or precisely the reverse of what is generally supposed.

The consideration of the sternum of birds illustrates this fact; in the lower class of reptiles, such as frogs and serpents, we find scarcely the vestige of a sternum. In other reptiles, as the tortoise, the sternum acquires, all of a sudden, its maximum of development, and consists of nine distinct bones; in birds it is also a very complicated part, but in man and mammiferæ it again becomes simple, and suffers, one may so speak, a retardation of development; in this case; it is obvious that the development of the fœtal sternum has no correspondence with what we observe in the animal series.

3. There is another circumstance which tends still further to limit this doctrine of fœtal development; man possesses many organs, of which not a vestige is to be found in many of the invertebral animals, while they, on the contrary, have many parts which no one has ever suspected to exist even in the earliest periods of embryo life. No brain or spinal marrow occurs in invertebral animals, nor do we find in them any traces of hyoid bone or tongue; while on the other hand, such organs as antennæ are only found in the insect tribes, and we may add, that the compound eyes of insects present scarcely any point of analogy with the eye of the embryo during any period of its history.

We will now procced to consider the history of the deve-

lopment of certain organs, especially the vascular and nervous apparatus, and endeavour to ascertain, whether there is any parallelism between the fixed conditions of those systems in the animal series, and the varying states of fœtal organization. The vascular system of the embryo, says Meckel, at first consists of the omphalo-mesenteric vein; this state of the vascular system corresponds to what we observe in the medusæ and zoophytes, in which there is only one set of vessels; notwithstanding this deservedly high authority, the analogy is far from being so complete as he supposes, for the simple vessels of the medusa proceed from the stomach, to carry its contents to every part of the animal as well as to the respiratory tegumentary membrane, so that in this zoophyte the vessels partake of the double nature of arteries, lacteals, and intestinal canals. At a more advanced degree of development, he continues, the heart shews itself under the form of a slightly muscular dilatation, as in most worms, among whom we detect a very complicated vascular system, although there is scarcely any heart. The heart afterwards is analogous to that of crustaceæ; now in all this, the parallelism is more apparent than real, for the total mechanism of the circulation in worms and crustaceæ is very different from any thing we can detect in any period of the history of the embryo. The circulation of crustaceæ, as has been shewn by M. Edwards and Cuvier, consists in this, that the whole venous blood of the body is collected in the heart, which sends it to the branchiæ, and from thence into the arteries of the body; so that in these animals there is only a branchial, and no aortic heart. It is also to be remembered, that in these animals the position of the heart is dorsal, and not sternal, as in man.

If we ascend still higher in the animal scale, we find certain resemblances between the fœtal heart and that of reptiles, but would require more evidence than has yet been brought forward in proof that these circumstances depend upon a law of parallelism in the development of organs in the embryo, and in the

animal series. Thus, in the tortoise, the pulmonary artery communicates with the aorta during the whole of its life, as it does for some time in the fœtus; but this does not depend upon a law of development, but on a law of adaptation. The conditions of fœtal life require that the arterial and venous blood should be mingled, and the lungs are then a useless organ. The tortoise is, during its whole life, under a similar condition, and hence it permanently retains this peculiarity of the vascular system. In the same manner, graniverous fowls, and certain freshwater snails, possess muscular gizzards, not surely in virtue of a law of development, but in virtue of a law of adaptation: both live on vegetable food, both have imperfect organs of mastication, and hence both have muscular stomachs. There is another most important fact in the history of the development of the vascular system. The embryo possesses a vena porta from the first apparition of its vascular parts. Now, this hepatic system is not found in invertebral animals, it belongs only to the higher tribes, and yet it is one of the first vascular parts which we detect in the embryo.

If we next examine the arrangement of the heart and blood vessels in invertebral animals, we will find that nothing analogous can be detected at any period of fœtal evolution. In the crustaceæ, the heart is always dorsal, while in the fœtus it is placed near the sternum; and in respect to position, therefore, no analogy exists between the heart of the fœtus and that of invertebral animals. Further, the position of the heart with respect to the arteries and veins and respiratory organs, is very different from what we observe in the embryo. In crustaceæ the heart is what may be called aortic, or, in other words, all the venous blood is transported to the gills, without the intervention of a heart. From the gills it returns to the heart, which propels it through the arteries of the body, and from them through the veins and branchial arteries; and it is finally returned to the heart by the branchial veins.

If we next ascend to the heart of fishes, we find it is equally

remote from any thing observed in the fœtus. In fishes, the heart is the inverse of what it is in the crustaceæ; the veins of the body transmit the blood to the heart, which sends it on to the gills, and the arterial blood is circulated without the intervention of any heart. In these instances, therefore, we have the example of two modes of carrying on the circulation, the one the inverse of the other; so that, if the fœtal circulation corresponds successively to the one and the other, its inversions must be indeed wonderful.

The only analogy which we can trace between the circulation of the fœtus, that is, in the inferior classes of animals, is the phenomenon of the mixture of arterial and venous blood, which takes place equally in the embryo and in reptiles. In the fœtus, the umbilical vein distributes part of its blood to the liver; and then, under the name of ductus venosus, joins the inferior cava, through which the mixed blood of the inferior part of the body is carried into the right auricle of the heart. Part of this blood passes directly from the right auricle to the left, through the foramen ovale; the greater part of the remainder passes from the pulmonary artery, by means of the ductus arteriosus, into the aorta. It must be acknowledged that there is a great analogy between this mode of circulation and that which exists in some reptiles. In the tortoise there are two auricles, and a single ventricle. In these curious animals the blood received from the lungs by the left auricle, and the venous blood of the right auricle, are both poured into the left ventricle; and hence, as in the fœtus, the blood circulated in the arteries is a mixture of arterial and venous blood. In this case, however, we must be careful not to push the resemblance beyond its due limits; for the analogy is one—not of similarity of structure, but of similarity of function. In the tortoise there is a pulmonary circulation which the fœtus does not enjoy; and there is no ductus arteriosus in the reptile, while it exists in the embryo.

If, from the consideration of the vascular system, we now pass to that of the nervous system, we will find that the evidences of

a parallelism of development are scarcely less satisfactory. With respect even to the earliest appearance of the nervous system in the embryo, we may safely assert, that there is no one point of resemblance between it and the nervous structure of invertebral animals. Thus, in the embryo, we first perceive two parallel cords, situated near the back, and extending into the cranium; or, in short, the rudiments of the brain and cerebellum. The structure of the nervous system in invertebral animals is the reverse of all this. In them we observe two nervous cords, running not on the dorsal region, but the abdominal, and having the digestive organs and viscera above them. The chief nervous mass in the invertebral animals rests upon the œsophagus, and is not contained in the veins of the cranium. There is another equally important circumstance, which is still more irreconcileable with all attempts to draw any parallel between the nervous system of the fœtus and that of invertebral animals. In the embryo, as in the adult animal, the spinal marrow gives off nerves of volition and sensation only while the digestive organs are supplied by the independent system of the great sympathetic. The nervous system of invertebral animals is very different; for the same ganglions give off not only nerves to muscles, and the organs of sense, but also to the liver and viscera, thus performing at once the functions of both spinal marrow and sympathetic.

If we pass from the invertebral to the vertebral animals, it is true we will find that the configuration of the brain and spinal marrow in the human embryo exhibits many analogies with what we observed in the permanent structure of the same parts in the inferior animals. In the development of the brain and spinal marrow of the embryo we perceive a considerable resemblance of the same organs in the inferior animals. The spinal marrow is originally hollow in the fœtus; and this spinal ventricle is the permanent condition of fishes. The tubercular quadrigemina and the cerebral lobes are the first distinct portions of the brain which appear; and they, with the cerebellum, con-

stitute the brains of fishes and reptiles. The cerebral lobes, at a more advanced period, do not cover the cerebellum or tubercula quadrigemina; and this is the permanent state of the brain of birds. At a more advanced period of fœtal life, the brain is destitute of convolutions; and this is the permanent condition of many mammiferous animals. The following considerations, however, will prove, that these undoubted facts are by no means conclusive as to the parallelism of the growth of the fœtal brain, and that of the development of the same organ in the inferior vertebrata. In the first place, it is to be remembered, that the possession of a brain and spinal marrow is the essential character of all vertebral animals; and consequently, that every one of them must have all the essential elements of this kind of nervous system. A spinal marrow, cerebellum, tubercula quadrigemina, and cerebral lobes exist in all vertebral animals; and consequently, their presence in the fœtus is nothing surprising.

It is also to be remembered, that the resemblance of the fœtal brain to the different grades of development of the same organ in the inferior animals, is only true in a very general sense; and when the proposition is as much as possible deprived of all details, and so generalized as to comprehend almost every thing. If we, however, investigate the proposition more minutely, we shall find many exceptions to this general law. Thus, in fishes, the cerebellum is very well developed; while in frogs and reptiles it is comparatively atrophied. Now, if the parallel hold good in the human embryo, there ought to be a period when its cerebellum underwent a temporary arrest of development; but of this we have no evidence whatever. Again, the brain of ruminating animals, and of cetaceæ, has many convolutions: in the rodentia there are none, while they appear again in the carnivora; and it is obvious, that in such a case a corresponding development on the part of the fœtus is next to impossible.

It would be an easy, but a fatiguing task to follow out the

same line of observations with respect to the development of the other organs of the embryo, and to shew that there is no correspondence exhibited between their successive conditions, and the inferior organizations of the animal series. Instead, however, of continuing this course of investigation, the following general remarks will, in some degree, compensate for the omission, by pointing out those circumstances which are incompatible with the hypothesis which we are combating.

In the first place, it may be remarked, that any relations which may exist between the earlier states of fœtal structure and the organization of invertebral animals, is rather those of contrast than of similarity. The invertebral animals are constructed on too different a type to be in any great degree assimilated to the structure of the human embryo. No one will be so enthusiastic as to expect to find the stigmata and tracheæ of insects, their compound eyes, or the external ligamentary skeleton, at any period of the metamorphosis of the human embryo. It would be still more extravagant to seek for the shells of testacious animals, or the arms of cephalopode mollusca, or the rays of the star fish; and it is thus when we descend from the abstruse general proposition to a study of details, that we find this seemingly beautiful and consistent theory to crumble to pieces under our scrutiny.

Or, secondly, the same remark may be stated under another form; and we may assert, that there are numberless parts which occur in the inferior animals, of which the remotest vestige has not been detected in the human embryo, nor indeed in that of any vertebral animal. The antennæ or feelers are a most characteristic and important part of many invertebral animals; but we have no evidence of their existence in the human embryo. Again, in birds, there are two cœca, one on each side of the rectum; but the human embryo never possesses more than one. Many of the inferior animals have a muscular stomach; and others, as the cuttle fish and the ruminants, have a four-fold stomach, which never exists in the fœtus of men.

Another very important observation is, that when we speak of development, if we attach any consistent meaning to words, we mean a gradual unfolding and complication of parts ; or, in other words, that accessary parts are added to the originally simple organ. This doctrine, however generally admitted, is far from being a universal law of nature ; and we will find that, on the contrary, a progressive deterioration is sometimes the law of development. We believe it will be admitted by every one, that an animal is in its highest state of development when it is capable of continuing its species ; but the following observations will shew with what limitations this principle is to be received. It may be stated, that in the human embryo the circulation is a much more complicated process than in the mature individual, and that such organs as the thymus are lost after the close of uterine life. In the inferior animals we observe still more striking instances of this fact. The spirally convoluted intestines of the tadpole become much simpler in the mature frog. This is seen to a still more wonderful degree in the masticatory organs of caterpillars and butterflies. In the embryo caterpillar there is an upper and lower lip, including between them two powerful jaws and two mandibles. In the adult butterfly all these organs exist. The mandibles, transformed into a spiral tongue, and the maxillæ, have completely disappeared ; or, at least, are so far atrophied, that till of late years their existence was never suspected. But a still more astonishing example is afforded in the development of the sernæa and aloid animals. Till very lately this animal was only known in the adult state ; from the extreme simplicity of its structure it was classed among the zoophytes. Recent observations have, however, completely altered the views of naturalists on this subject. In its young state, the sernæa is a hexapode crustacea, possessed of organs of locomotion, eyes, and antennæ. When capable of continuing its species, it is changed into a worm, adhering to the gills of fishes, and destitute of eyes and feet. In such a case, no one will venture to maintain that this is a process of development,

in the usual sense of the word; still less that the changes of the embryo of this animal correspond to the permanent conditions of the animals immediately below it.

If we attempt to generalize the laws of fœtal evolution, and to found our theories not upon partial facts, but upon a comprehensive view of the whole animal series, we will find but little to countenance the theory which we have opposed; on the contrary, we will find that the laws of embryogony may be included under the old and recognized principles of physiology.

The embryo of every animal has, from its earliest period of existence, a determinate structure which it is to preserve during its whole existence, only modified at different periods to suit the conditions under which it exists; hence the human embryo, even at the first moment of conception, is no less a human being, physically speaking, than when the same germ has been unfolded into the mature man in the full perfection of his organization. The little homunculus does not pass through every inferior form in his progress to manhood any more than a zoophyte can, after countless generations, by the force of circumstances, be transformed into the human species. Even the comparative anatomy of the embryos of the various classes of the animal kingdom proves the accuracy of this proposition; many of those animals, to which the name of zoophytes has been given in their adult state, are destitute of all powers of locomotion, and like vegetables, are permanently fixed to one place. In such animals the ova have the faculty of moving from place to place, the locomotive powers of the embryo having the means which have been employed to people the ocean with these beautiful objects. In the cephalopod mollusca, as Aristotle long since observed, the umbilical vesicle does not communicate by the navel but by the mouth. The reason appears to be, that in these animals the body is usually covered by a shell, or has a shell included in its integuments. A still more remarkable peculiarity is observed in the embryos of insects; in them the

vesicle communicates not with the navel but with the back ; and here the object is equally apparent. The nervous system is developed on the abdominal surface, and the intestines are above it. Hence that the growth of the nervous cords be not impeded, and that the vesicles communicate with the intestine by the shortest route, it is placed, not on the abdomen, but on the back.

From these observations it appears that each embryo follows its own determinate law; and it is also obvious, that in the evolution of its parts, it must be adapted to its temporary condition of uterine life, as well as prepared for its future extra-uterine existence; and hence the explanation of these few undoubted analogies which exist between the structure of certain organs in the fœtus, and in the lower animals. During the uterine life, it is necessary that the sensations should be kept low, a condition which is permanent among reptiles ; and hence, similar ends are attained by similar means. In both cases, the arteries circulate a mixture of arterial and venous blood; and hence, in both cases, a low temperature. The nervous system corresponds to this condition of low vitality; and hence the tubercula quadrigemina and cerebellum constitute the chief part of the brain, and the inactivity of the fœtus may be compared to the hybernation of reptiles.

ART. XV.—*Researches in Operative Midwifery.* No. 5. *On the Perforator and Crotchet.* By FLEETWOOD CHURCHILL, M.D., Lecturer on Midwifery at the Richmond Hospital School, and Physician to the Western Lying-in Hospital, &c. &c.

THE next obstetric operation we have to consider belongs to the second class, that is, where one life is sacrificed to secure the other ; the mother's safety being purchased by the destruction

of her child, in cases where both would be lost if no interference were attempted.

The instruments (or part of them) employed in this operation are of great antiquity; and although they were originally proposed for the extraction of dead children only, yet this scruple had no effect in saving the life of the child, but merely postponed the interference until after its death. This conscientious quibble (refusing to destroy a child, but allowing it to die) was soon detected, and then the hook was used with living children, provided that delivery were otherwise impossible.

The class of cases to which it was applied, doubtless included a vast number which were subsequently relieved by the forceps; but there were still left a great many in which it was indispensable.

Having premised these observations, I shall proceed with a sketch of the history of craniotomy, and the use of the crotchet.[a]

Several of the ancients recommend this operation. Hippocrates advises the breaking up of the cranium and extraction by the hook.

Moschion advises embryulcia in those cases where the fœtus cannot be extracted by the hands, and if embryulcia be insufficient, the exsection of the limbs and body of the child.[b]

Albucasis, the Arabian physician, describes instruments for

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[a] I have not thought it necessary to enter into the morality of the operation; the concurring testimony of all the modern authorities has established it as an axiom in midwifery, that when both lives are in jeopardy, the safety of the one may lawfully be secured by the sacrifice of the other; and that of the two, the life of the mother is unhesitatingly to be preferred.

For the arguments of the French Sorbonists upon this subject, see Peu, Pratique des Accouch.

[b] Stachius, Authores de Morbis Mulierum, p. 13.

compressing and breaking up the child's head, and others for extracting it.[a]

Of certain cases of difficult labour, when the child is presumed to be dead, Celsus remarks, "Si caput proximum est, demitti debet uncus, qui vel oculo vel auri, vel ori interdum etiam fronti rectè injicitur."[b]

In the "Birth of Mankinde," written by Eucharius Röslin, translated into Latin about the year 1535, and into English by Thomas Raynalde, in 1634, I find the hook recommended to bring away dead children. "If so be," he says, "that it lie the head forward, then fasten a hook either upon one of the eyes of it, or the roof of the mouth, or under the chin, or on one of the shoulders,—which of those parts shall seem most commodious and handsome to take it out by, and the hook fastened to draw it out very tenderly, for hurting of the woman." If the head be too large, it is to be opened with a sharp penknife, or broken in pieces.

He also recommends excision of the extremities, if they present, (the child being dead,) or evisceration, to facilitate the delivery.

Ambrose Parè's work is dated 1579, and it was translated into English in 1634. In it are given plates of different hooks for drawing out the child, and a knife for the excision of the limbs.

In 1635, Guillemeau's work was translated, and Parè's hook was recommended. He agrees with the preceding writers, that it is proper to use this hook with dead children; but he goes a step further, for whilst admitting the difficulty of ascertaining the death of the child, and recommending great caution, he adds:

"But if the childe bee alive, it is a great question whether he ought to be pulled forth by the crotchet, pre-supposing that

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[a] Stachius, p. 444.

[b] Kilian, Die Operative Geburtshülfe, vol. ii. p. 702.

the mother, having lost her strength, is ready to die except this means bee used; it being more expedient to lose the mother than the childe, who would both die if that were deferred any longer; and whether to save the mother, (who is more dead than the said childe,) this practice may be ventured. But, as I think, there are none that goe about this businesse but with some touch of conscience, which being a point of divinity, I leave to be decided by them that are more conversant therein than myselfe."[a]

He also recommends opening the head previous to applying the hook, and speaks of using the hook when the head is detained in breech or footling cases.

Deventer, the translation of whose work is dated 1716, objects altogether to hooks and other instruments.

At this time the forceps was known to the Chamberlens, and shortly afterwards to others; and we cannot be surprised at finding its powers overrated, as though it would supersede destructive instruments. Accordingly, we find Dr. Hugh Chamberlen proscribing their use, and proclaiming the superiority of his secret method.

Chapman also, in 1733, objects to the hook, if the child be living, on the ground that the forceps are sufficient.

A similar opinion was also expressed by Giffard in 1734.

In 1742, Sir Fielding Ould published his valuable work, in which, whilst fully appreciating the utility of the forceps, he points out a class of cases to which it is inadequate, and which requires the evacuation of the fœtal brain, and the extraction of the child. He objects to Mauriceau's "*tire-tete,*" on account of the difficulty of using it; in one case he opened the head by means of an ordinary pair of scissors, in order to avoid the danger of using a scalpel; and subsequently he invented an instrument for this purpose, which he called the "terebra occulta."

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[a] Childbirth, or the Happy Delivery of Woman, p. 140.

La Motte, whose work was translated by Mr. Tomkyns in 1746, opened the head of the child with a knife, and then introduced his fingers within the skull for the purpose of extracting; but if the head were too high, he caught hold of the skull with a pair of pincers, one blade being internal, and the other external.

In the year 1744, Dr. Simpson described his "ring scalpel," for the purpose of opening the head.[a]

Dr. Burton, 1751, rests the necessity for destructive instruments upon the condition of the mother. He describes a crotchet resembling the one in present use, but recommends two to be used—one on each side of the head. He also used a modification of the "terebra occulta" before Ould's work appeared; and he mentions a person in York who used a pair of blacksmith's pincers for the purpose of extraction.

Dr. Smellie, 1752, in his work on midwifery, clearly defined the cases in which the crotchet is available; not limiting it to those where the child is dead, but recommending it "when it is impossible to turn, or deliver with the forceps," i. e. "when the pelvis is too narrow, or the head too large to pass." He recommends the crotchet proposed by Mesnard, which is nearly the same as the one used at present, and a strong pair of scissors, with a stop at the shoulder.

Sir Fielding Ould first employed the scissors, but without the stop. As the perforator now used is but a modification of scissors, and as the crotchet is nearly the same as was then employed, I shall content myself with simply referring to the subsequent writers, noticing the various modifications of the instrument by-and-by.

The reader will find information upon the subject in the works of Pugh,[b] Memis,[c] Cooper,[d] Johnson,[e] Moore,[f]

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[a] Ed. Med. Essays, vol. v. part i. p. 445. [b] A Treatise of Midwifery, p. 87. 1754. [c] The Midwife's Pocket Companion, p. 100. 1765. [d] A Compendium of Midwifery, p. 126. 1766. [e] New System of Midwifery, p. 282. 1769. [f] Essays on the Practice of Midwifery, p. 187. 1783.

Perfect, Foster,[a] Spence,[b] Hamilton,[c] Dease,[d] Aitken,[e] Denman,[f] John Clarke,[g] Burns,[h] Merriman,[i] Dewees,[j] Conquest,[k] Gooch,[l] Campbell,[m] Ramsbotham,[n] Ashwell,[o] Blundell,[p] F. H. Ramsbotham,[q] Collins,[r] Hamilton,[s] Meigs.[t]

As to the history of this operation among the French :—we have already seen that Ambrose Parè, in 1579, recommended certain hooks for extracting dead infants, and a knife for cutting off the limbs.

In 1674 M. Viardel published his "Observations sur la Pratique des Accouchemens naturels, contre-nature et monstreux," with the view of showing that no instrument but the hand was needed.

Paul Portal, in "La Pratique des Accouchemens," 1685, mentions his having used the crotchet in certain cases, but most frequently with dead children.

M. Mauriceau, 1690, recommends the crotchet in cases of impacted head; and he also invented an instrument called a "tire tête," which was to be introduced into the skull, and was said to afford a better purchase for extraction.

Peu, "Pratique des Accouchemens," 1694, speaks of the crotchet applied in the meatus externus of the ear, without fatal injury to the child, though not without a wound of the integuments.

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[a] Principles and Practice of Midwifery, p. 162. 1781. [b] A System of Midwifery, p. 213. 1784. [c] Outlines of Midwifery, p. 288. 1775. [d] Observations in Midwifery, p. 53. 1783. [e] Principles of Midwifery, p. 78. 1784. [f] Introduction to Midwifery. 1787. p. 307. [g] London Pract. of Midwifery. 1803. p. 223. 6th Ed. [h] Principles of Midwifery, p. 500. 9th Ed. [i] Synopsis of Difficult Parturition, p. 168. 4th Ed. [j] Compendium of Midwifery, p. 573. 1825. [k] Outlines of Midwifery, p. 113. 5th Ed. [l] Lectures by Skinner, p. 216. 1831. [m] Introd. to Midwifery, p. 253. 1833. [n] Pract. Obs. in Midwifery, vol. i. p. 306. [o] On Parturition, p. 396. 1834. [p] Obstetricy, p. 532. 1834. [q] Lond. Med. Gaz. p. 342. 1833-34. [r] Pract. Treatise on Midwifery, p. 17. 1835. [s] Practical Observations, vol. ii. p. 117. 1836. [t] Philadelphia Pract. of Midwifery, p. 317. 1838.

Pierre Amand, "Obs. sur la Pratique des Accouchemens," 1714, does not advocate the use of crotchets; but he invented a new "tire-tête," consisting of a bag to enclose the head, and six tapes for traction. This instrument was for extracting the head when left in the uterus.

La Motte, "Traitè des Accouchemens," 1726, speaks of opening the head when impacted, with a bistoury, and extracting with the crotchet.

Jacques Mesnard, "Guide des Accoucheurs," proposed a single and double crotchet, and a pair of craniotomy forceps.

Puzos, "Traitè des Accouchemens," 1759, recommends the crotchet for evacuating the brain and extracting, in the case of dead children, when labour is delayed.

Astruc, "L'Art d'Accoucher," 1766, directs the crotchet to be used with dead children; but is very cautious about employing it when the child is alive.

M. Jacob, "Ecole pratique des Accouchemens," 1785, recommends Smellie's scissors for opening the head, and a blunt hook for extracting it. He also describes the process of evisceration.

M. Levret, "Suite des Observations sur les Accouchemens Laborieux," 1747, gives a plate of a three-bladed instrument (resembling Leake's forceps) for the purpose of extracting the head when left in the pelvis, and also of a single crotchet. A second blade can be fitted to this, and the two, thus joined, Levret used for extracting the body of the child after the removal of the head.

In addition to these authors, I may refer the reader to the works of Baudelocque,[a] Saccombe,[b] Dufot,[c] Lachapelle,[d] Maygrier,[e] Capuron,[f] Gardien,[g] Velpeau.[h]

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[a] L'Art Accouchemens, vol. ii. p. 231. [b] La Science des Accouchemens, p. 280. [c] Principes sur l'Art d'Accoucher, p. 233. [d] Pratique des Accouchemens. [e] Nouv. Elemens d'Accouchemens, vol. ii. p. 416. [f] Cours d'Accouchemens, p. 505. [g] Traitè des Accouchemens, vol. iii. p. 101. [h] Traitè Complet. des Accouchemens, p. 465. Brussels Ed.

The reluctance with which the French authors recommend the crotchet, and their anxiety to press the use of the forceps, are worthy of remark.

The Italian writers recommend the crotchet for extracting dead infants, but omit all mention of evacuating the brain before life is extinct. The reader may consult the works of Melli,[a] Asdrubali,[b] Bongoianni,[c] &c.

Unfortunately I possess but few early German writers; I must therefore content myself with referring my reader to Kilian's work,[d] and to the more recent authors within my reach.

Among those which I possess, I find the operation described with more or less minuteness by Henckel[e] (1770); Hagen[f] 1782); Boer,[g] Spiering,[h] Steidele,[i] Ritgen,[k] Osiander,[l] Froriep,[m] Carus,[n] Joerg,[o] Busch,[p] Rosshirt,[q] Kilian.[r]

Having concluded this short *history* of the perforator and crotchet, I shall next briefly notice the *different modifications of the instruments.*

1. Albucasis describes a species of forceps with teeth, which he terms a "misdach, or almisdach," for the purpose of crushing the head, and enabling it to pass.

2. He also gives a plate of a single and double hook for extracting the child, and of a knife for cutting off the head.

3. Ambrose Parè contrived two kinds of blunt hooks, and a

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[a] La Comare Levatrice, &c., p. 312. [b] Trattato Generale di Ostetricia, vol. iii. p. 206. [c] Lezioni Elementari di Ostetricia, &c., p. 301. [d] Die Operative Geburtshülfe, vol. ii. p. 698. [e] Abhandlung von der Geburtshülfe, pp. 367, 411. [f] Versuch der pratischen Geburtshülfe, vol. ii. [g] Natürliche Geburtshülfe und Behandlung, &c. vol. i. p. 181; vol. iii. p. 199. [h] Die pratische Geburtshülfe, p. 298. [i] Abhandlung von der Geburtshülfe, &c. vol. iv. p. 57. [k] Anzeigen der Mechan. Hülfen die Entbindungen, p. 378. [l] Handbuch der Entbindungskunst, vol. iii. p. 566. [m] Handbuch der Geburtshülfe, p. 468. [n] Lehrbuch der Gynæcologie, vol. ii. p. 335. [o] Handbuch der Geburtshülfe, p. 505. [p] Lehrbuch der Geburtskunde, p. 628; and Geburtshülfliche Abhandlungen, &c. p. 101. [q] Die Anzeigen der Geburtshülflichen Operationem, p. 139. [r] Die Operative Geburtshülfe, vol. ii. p. 698.

double one with sharp points, for the extraction of the fœtus, and a knife for excision.

4. Mauriceau invented an instrument which he called a "tire tête," consisting of a circular plate of steel, fixed upon a rod. The circular plate was to be introduced into the head, (previously opened by a scalpel,) and being placed across the opening, traction was to be made. This instrument was never much used, owing to the difficulty of introduction, and its feeble power when introduced.

5. Sir F. Ould's "terebra occulta" consisted of a sharp-pointed rod enclosed in a canula or sheath, and retained by a spiral spring at the lower end. When the handle was pressed upwards, and the resistance of the spring overcome, the point of the instrument protruded a certain distance, but was retracted when the pressure upon the handle was removed. Its application to the head was easy and safe; but it must have been nearly useless, from the small opening it made.

6. Dr. Simpson, of St. Andrew's, invented an instrument which he called a "ring scalpel," for opening the skull. It consists of a loop of steel, through which the finger is to be passed, and from which protrudes a sharp-pointed blade about an inch long, by which the cranium was pierced.

7. M. Mesnard described a crotchet which could be used either double or single, and which was the original of the one in present use. He also gives a plate of a "perce-crane," and a pair of "tenettes à conducteur," that is, craniotomy forceps.

8. Dr. Burton copied Mesnard's double crotchet and "perce-crane," with some slight modification.

9. M. Levret gives a plate of a single crotchet, which was arranged to fit into a socket on the top of another blade, for the purpose of protecting the mother, and rendering the purchase more secure.

10. Dr. Smellie recommended Mesnard's crotchet, (single or double,) but instead of the "perce-crane," he used a pair of strong scissors, with stops at the shoulders, to prevent the blades

entering too far. Denman abolished the cutting edge altogether, and added strength to the blades. A spoon was also used to evacuate the brain, but it is now very properly discarded.

11. Dr. Wallace Johnston published an account of his instruments for opening the head and extracting the child. I do not know that they have ever been used by any other person.

12. Dr. Aiken proposed a flexible or living crotchet which could be adapted to the convexity of the child's head.

13. M. Baudelocque recommended a very simple extractor, consisting of a small piece of wood, to the centre of which a ribbon was attached. An incision having been made with a bistoury, or "perce-crane," the bar of wood was to be introduced and placed crosswise, and then extraction made by the ribbon.

14. M. Osiander has given a plate of an instrument for piercing the skull, and another for extracting. The latter is the same as Smellie's double crotchet.

15. M. Joerg advises an instrument like a trephine for opening the head, and a simple hooked rod for extraction.

16. Dr. Davis has invented several species of crotchet. He has given plates of double crotchets, the blades of which may be applied separately; the hooked blade may be within, or on the outside of the skull: and of a forceps for breaking up the skull.

These are a few of the principal instruments which have been used in the operation of craniotomy. I have not given a detailed description, because most of them are discarded: the instruments in general use being a modification of Mesnard's simple crotchet, and a pair of scissors with shoulder-stops, as recommended by Smellie, but having a sharp edge on the outside. Mr. Holmes has modified the latter, so that by closing the handles, we open the blades.

From the inconveniences sometimes experienced with the crotchet, and to avoid the risk of injuring the mother, craniotomy forceps have been employed by different individuals.

Among the moderns, M. Mesnard has the credit of first inventing and using this instrument, and since his time it has undergone various modifications.

Dr. Haighton used a pair resembling the lithotomy forceps; and since his time Drs. Conquest and Davis, Mr. Holmes, and others, have invented and described varieties of the instrument. The object of each is the same, viz., to avoid the risk of tearing the soft parts of the mother; and the principle of seizing the skull between two blades, furnished with teeth, is also alike.

I am free to confess that I do not like the craniotomy forceps, although I have tried them repeatedly. They are by no means so manageable as the crotchet, and the interposition of the hand of the operator will always protect the mother from injury by the latter.

There is one case, however, in which the forceps may be more useful, and that is, where the bones of the head are extremely hard, so that it is almost impossible to fix the point of the crotchet.

18. M. Baudelocque, jun., has invented an instrument, which he calls a "cephalotribe," for the purpose of crushing the head. It consists of a very strong pair of forceps, about two feet in length—the handles of which are connected by a screw which pierces them, and which is turned by a handle until the blades are so closed as to effect their object. Velpeau states that instruments somewhat similar have been formerly used by Assalini, Osiander, Delpech, Colombe, &c. M. Baudelocque is said to have used it three times successfully (and safely as regards the mother) in the year 1832, and once again in 1834. It is also said that M. Champion has tried it with success.

Its appearance is so formidable, that I doubt if it could be used in this country. I am not aware that the attempt has been made.

The object of the operation of craniotomy is to terminate the labour with safety to the mother, in cases where, from the disproportion between the size of the fœtal head and the pelvis,

a living child can neither be expelled by the natural powers, nor extracted by the forceps. Such a case, if left to nature, (as it is called,) will terminate fatally for both mother and child; consequently, although the child is destroyed to facilitate the delivery, and to save the mother, it can hardly be said to be sacrificed, inasmuch as no efforts of ours could have ensured its safety.

The case presupposes, on the one hand, *actual disproportion sufficient to prohibit the passage of the fœtal head, even when compressed;* and on the other, *that the distortion is not so great as to prevent the extraction of the child when mutilated.*

Dr. Osborn states, that when "the bones approach much nearer to each other than three inches, it is utterly impossible for a living child at full maturity by any means to pass."[a] He fixes upon $2\frac{3}{4}$ inches, as the diameter rendering craniotomy necessary. M. Alphonse Le Roi says that $3\frac{1}{4}$, Dr. Aitkin 3, Dr. Jos. Clarke $3\frac{1}{2}$, Dr. Burns $3\frac{1}{4}$, Dr. Ritgen 2, and Dr. Busch $2\frac{1}{2}$ to 3 inches, is the smallest anterior-posterior diameter through which a living child can pass.

As to the other limit of the operation, that is, the smallest diameter through which a child can be extracted after craniotomy, Dr. Osborn[b] remarks:

"Whenever there is a space from pubis to sacrum, or from the fore to the hind part of the upper aperture of the pelvis, equal to an inch and a half, I am convinced it will be always practicable to extract a child by a crotchet, after the head has been some time opened; and the texture of the child's body is softened by putrefaction, (as recommended above,) and the whole of the parietal and frontal bones are picked away."

Baudelocque says that the crotchet is inadmissible when the diameter is only $1\frac{2}{3}$ of an inch; Dr. Dewees, when it is less than 2: Dr. Hull and Dr. Burns believe that it may succeed

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[a] Essays on Midwifery, p. 194. [b] Ibid. p. 230.

when the diameter is $1\frac{3}{4}$; MM. Gardien and Hamilton when it is $1\frac{1}{2}$; and Dr. Davies when it is 1 inch.

The nature of the operation is simple, but the aid afforded may vary in degree.

1. In the case of dead children, the older practitioners used the crotchet alone, as an extracting force, without opening the head.

2. In some cases, where the sutures are very loose, the evacuation of the brain will be sufficient, as the bones of the cranium collapse so much under the influence of the pressure downwards, that the child may be expelled by the natural powers. But in this case it is assumed that the pains are sufficiently strong and frequent.

3. When (as is frequently the case) the pains are inefficient, or when the state of the patient demands prompt relief, then we must not only evacuate the brain, but add extracting force by means of the crotchet or craniotomy forceps.

4. In some cases, the distortion of the pelvis is too considerable to admit the passage of the head, even when emptied of its contents; or the obstruction may result from the ossification of the bones of the skull; in either case, an extension of the operation is necessary to complete the delivery. This may be effected by breaking up the cranium with a small pair of forceps, resembling M. Mesnard's; or, according to M. Baudelocque, jun., by the use of the cephalotribe. It would require unusual hardihood to venture upon the latter instrument in private practice in this country.

In these cases of distortion, after the head has been extracted piecemeal, we may find it impossible to bring away the body of the infant. We must then use the perforator for the purpose of evacuating the contents of the chest and abdomen, and afterwards apply the crotchet to extract the child.

One or more of these modifications of the operation will be successful in all cases which come within the limits already described.

The positive *advantage* we obtain from embryotomy is the safety of a large proportion of the mothers, who, in addition the children, must have perished, had no aid been afforded. The children of course are all lost.

What the proportion of success is, I shall now endeavour to shew; but previous to this, I shall adduce whatever evidence we possess to ascertain the comparative frequency of the operation.

TABLE I.—FREQUENCY OF THE OPERATION.

a. *Among British Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of Crotchet Cases.	References.
1781	Dr. Bland . . .	1,897	8	Merriman's Synop.p.333
1787 to 1793	Dr. Joseph Clarke .	10,387	49	Trans. of Assoc. vol. i.
	Dr. Merriman . .	2,946	9	Synopsis.
1818	Dr. Granville . .	640	3	Report, p. 25.
1828-29	Dr. S. Cusack . .	701	5	Dublin Hosp. Reports.
1832-33	Dr. Maunsell . .	839	5	Ed. and Dub. Jour.
1829	Mr. Gregory . . .	691	2	Dub. Hosp. Rep. vol. v.
1826 to 1833	Dr. Collins . . .	16,414	79	Practical Treatise.
1834	Dr. Thomas Beatty.	1,182	3	Dub. Jour. vols. viii. xii.
1834, 36, 37,	Dr. Ashwell . . .	1,439	3	Guy's Hosp. Reports.
1836,37,38,39	Dr. Churchill . .	1,700	11	Reports to June, 1840.
1838	Mr. Warrington . .	88	1	American Journal.
1829	Mr. Mantell . . .	2,510	3	Do.
		41,434	181	

b. *Among French Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of Crotchet Cases.	References.
1797 to 1809	Madame Boivin . .	20,517	16	Memorial, p. 337.
1803 to 1811	Madame Lachapelle	15,652	14	Prat d'Accouch. p. 500.
		36,169	30	

c. *Among German Practitioners.*

Date.	Authors.	Total No. of Cases.	No. of Crotchet Cases.	References.
1801 to 1807	M. Richter, Moscow .	2,571	3	Velpeau.
1811 to 1827	Moschner and Kursak, Prague	12,329	4	Siebold's Jour. vol. ix.
1812	Dr. Siebold, Wurzburg	170	1	Do. vol. i.
1818 to 1829	Do. Berlin .	97	1	Do. vol. x.
1832	Do. Marburg .	155	1	Do. vol. xiii.
1814 to 1827	Dr. Carus, Dresden .	2,908	9	Do. vol. ix.
1819	Dr. Ritgen, Giessen, .	103	1	Do. vol. vi.
1825 to 1827	Dr. Kilian, Prague .	2,350	4	Velpeau.
1794 to 1804	Dr. Hennè, Copenhagen	500	1	Siebold's Jour. vol. ii.
	Dr. Naegelè, Heidelberg	1,411	5	Velpeau.
1821 to 1825	Dr. Riecke	219303	84	Do.
1825, 26, 27,	Dr. Klugè, Berlin . .	809	8	Siebold's Jl. vols. vii. ix.
1825	Prof. Andrèe, Breslau .	351	2	Do. vols. vii. viii.
1827	Dr. Küstner, Breslau .	176	2	Do. vol. ix.
1829	Dr. Adelman, Fulda .	57	1	Do. vol. xi.
1797 to 1837	Dr. Jansen, Ghent . .	13,365	5	Med. Gazette, March 6, 1840.
		256,655	132	

Thus, among British practitioners, we have 181 crotchet cases in 41,434 cases of labour; or about 1 in 228.

Among the French, 30 crotchet cases in 36,169; or 1 in $1205\frac{2}{3}$.

And among the Germans, 132 crotchet cases in 256,655 labours; or 1 in $1944\frac{1}{3}$.

Added together, we have 334,258 cases, and 343 in which the crotchet was used; or 1 in $974\frac{1}{2}$.

TABLE II.—RESULTS OF THE OPERATION TO THE MOTHERS.

Authors.	No. of Crotchet Cases.	Mothers died.
Dr. Smellie,	44	4
Mr. Perfect,	3	0
Dr. Jos. Clarke,	49	16
Dr. Granville,	3	3
Dr. Ramsbotham,	34	5
Dr. Maunsell,	5	2
Mr. Gregory,	2	1
Dr. Collins,	79	15
Dr. Beatty,	3	0
Dr. Churchill,	11	1
Mr. Warrington,	1	0
Dr. Siebold,	3	1
Dr. Ritgen,	1	0
Dr. Klugè,	8	3
Dr. Andrèe,	2	1
Dr. Küstner,	2	0
Dr. Adelman,	1	0
	251	52

This table gives a mortality of 52 in 251; or about 1 in 5.

At first sight one would expect the mortality among the mothers to be less, after the use of the crotchet, than the forceps; but the result of these investigations shews the reverse to be the case. The only explanation I can give is founded upon the natural unwillingness of every humane practitioner to destroy life—the consequence of which feeling is, the delay of the operation so long as there is a hope of evading it. This delay, however, is unfavourable to the mother, and when at length the operation is performed, although it may have been less severe than delivery by the forceps, yet her condition rendered her much more susceptible of injury from it.

The *comparative* advantages of the operation are very decided. In the cases we have supposed, the forceps is useless, and the natural powers inefficient; if, therefore, embryotomy

were rejected as inadequate, the only *alternative* would be the Cæsarean section, the mortality of which is much greater, for 1 in $2\frac{1}{3}$ of the mothers are lost; and 1 in $3\frac{1}{2}$ of the children.

It would, however, be a serious omission if I did not notice another *alternative* operation, which, although not available after labour has commenced, may supersede the necessity for embryotomy in subsequent pregnancies. I allude to the induction of premature labour. In all cases where pelvic distortion renders craniotomy necessary at the full time, it becomes our duty to recommend the induction of premature labour in subsequent pregnancies, at such a period as shall, if possible, afford a chance of life to the child, or at least save the mother from a severer operation. The mortality among the mothers is about 1 in 50, and more than half the children are saved.

So much for the positive and comparative advantages of the operation. I am not aware that there can be any just *objections* against it, in suitable cases: but undoubtedly there are most weighty objections against it, when employed without careful consideration, and consultation. In fact, it ought to be deeply impressed upon every practitioner, that he who destroys the child, without due evidence that this is his only resource for saving the mother, is guilty of murder.

But it may be asked, when the responsibility is so serious, what evidence will be sufficient to satisfy a conscientious practitioner that he may not be committing a crime in his anxious endeavour to afford relief? To this it may be answered:

1. That the continuance of strong labour pains for a certain time, without any advance of the head of the child, is so far evidence of a fixed obstacle to the passage of the child.

2. The failure of a cautious attempt to introduce the forceps will, to a certain extent, demonstrate the amount of the disproportion between the head and the pelvis; and the failure of a careful, yet firm attempt at extraction by the forceps, (when the application has been effected,) will prove that the disproportion cannot be remedied by compression.

3. A well educated finger will enable us in most cases to ascertain whether the diameters of the pelvis are such as will allow of the passage of a living child. And even though this mode be uncertain, we have a means of correcting our estimate, by comparison with the child's head, in apposition with the pelvis. If the natural efforts after several hours, or the forceps with a proper and safe amount of compression and force, cannot bring the widest part of the head of the child through the narrow part of the pelvis, we may fairly conclude that the only resource is craniotomy.

4. The general condition of the mother will also aid our decision. If she be much exhausted, if fever be present, the uterus powerless, the life of the child doubtful, and the success of the forceps dubious, we may shrink from inflicting the double shock of an unsuccessful application of the forceps, and subsequent delivery by the crotchet. But these cases are very rare; they only happen when the patient has been mismanaged, and it requires experience and judgment to decide upon the propriety of terminating them by embryotomy.

A careful consideration of these circumstances will, I think, enable us to arrive at a correct conclusion in an individual case; and as the responsibility incurred in the destruction of the infant may lead to timidity, it should also be remembered, that hesitation to act, when the case is clear, incurs a more fearful responsibility, by compromising the life of the mother.

The *cases* in which the operation is demanded are:

1. When the child is dead, and the labour tedious. But we must be quite sure that the child *be* dead, before this is made the ground of interference. If the head be putrid, and there is space in the pelvis, it is much better to use the forceps, as the bones and integuments of the skull give way so easily under the crotchet, that it is sometimes very difficult to extract the child. I have seen the operation prolonged two hours from this cause alone.

2. In distortion of the pelvis, when the antero-posterior dia-

meter of the brim is less than three inches, we have no chance of delivery by the natural efforts, or by the forceps; so that to save the mother, we must destroy the child.

"I presume that I have now satisfactorily proved the necessity and propriety of opening the head of the child at the beginning of labour, whenever the capacity of the pelvis is only $2\frac{3}{4}$ inches, or certainly less than three inches, from the utter impossibility of a child of ordinary size, at the full time, being born alive by any means, either of nature or art, through so small a pelvis."[a]

3. When the transverse diameter of the lower outlet is diminished to the same extent by the approximation of the tubera ischii, if the forceps, applied antero-posteriorly, are insufficient to move the head, we must have recourse to craniotomy.

4. When the calibre of the pelvis is dimished to a certain degree by a fixed obstacle—as, for example, a fibrous tumour, or an exostosis growing from the bone or periosteum, it may not be possible for the natural efforts alone, or aided by the forceps, to expel the child. In such cases it will be necessary to lessen the head, and apply the crotchet.

In these three latter classes of cases, the passage through the pelvis may be so much diminished as to render it necessary to break up the skull, or to eviscerate the child.

5. In some cases of ovarian disease, where the tumour has formed adhesions within the pelvis, so as to prevent its being pushed above the brim, it has been found necessary to lessen the head, before the child could be extracted. We are not, however, to decide upon this measure until the natural powers have had a fair trial, as it sometimes happens, that in the progress of labour, the tumour is so much displaced as to allow of the passage or the child. Further, it will be worth while, before sacrificing the infant, to ascertain whether the contents of the tumour may not be drawn off, by passing a long trocar into

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[a] Osborn's Essays on Midwifery, p. 223.

it. If a small quantity of fluid escape, it may allow of the application of the forceps, and so enable us to save the child. If, however, the tumour prove to be solid and immoveable, we must, as a "*dernier ressort,*" have recourse to the perforator and crotchet.

6. When the child is hydrocephalic to such an extent as to prevent its entering or passing through the pelvis, whether distorted or of the natural size, there can be no question of the propriety of opening the head.

7. In some cases of convulsions, rupture of the uterus, &c., where immediate delivery is necessary, *and where the forceps cannot be applied*, craniotomy must be performed.

8. If an arm descend along with the head, the diameters of which correspond closely to those of the pelvis, (whether the latter be of the usual size or not,) it may be necessary to terminate the labour by opening the head.

9. I have already alluded to a class of cases, where, from mismanagement, the patient has been allowed to continue too long without help, and in consequence is greatly exhausted, with fever, quick pulse, delirium, &c. In such cases, the patient will die if she be not assisted; and from the unfavourable state in which she is, she cannot bear a prolonged or very painful operation. Now, if there be sufficient space for the forceps, they ought to be preferred, and it would be very wrong to use the perforator; but if this be doubtful, and the probabilities against our succeeding with that instrument, then the consideration of the patient's inability to bear a severe operation may in some cases decide us in favour of embryotomy. These cases, however, are but few, and they must be well marked, to justify our adopting at once such extreme measures.

10. In footling or breech cases, when the head (separated or not from the body) cannot be extracted, we must evacuate its contents.

The next question to be decided, is the *period of labour* at which the operation should be performed.

1. In all cases where the diminution of the pelvic diameters is so great as to render it impossible that a living child can be born naturally or extracted, there can be no hesitation in recommending that the head should be opened at an early period of the labour, say as soon as the os uteri is dilated, or fully dilatable. By this means we shall afford a chance of the completion of the labour by the natural powers, as there can be no objection to waiting a few hours before extracting the child.[a]

"If the pelvis measures two inches and upwards, to less than three inches from pubis to sacrum, and the head be opened in the beginning of labour, and the cerebrum discharged by the collapsing of the bones, the volume of the head will be so much reduced as in all probability to admit, in time, of being forced into the pelvis by the powers of nature, by which means the application of the crotchet may perhaps be altogether avoided."[b] If the head do not advance, we may then extract.

It should always be remembered, that it is an important object to shorten the duration of suffering, as by so doing, the danger to the mother will be diminished.

2. When the distortion is less, we cannot be sure as to the result of the natural efforts, and we must wait until it is evident that they are inadequate; then an endeavour should be

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[a] "Under such circumstances, the late Dr. Christopher Kelly informed me—and I believe the practice originated with him—that he had left the head of the child, after the evacuation of its contents, for more than twenty-four hours, without making any artificial attempts to extract it, and that the operation was by this delay rendered more safe, and infinitely more easy. The late Dr. Mackenzie also informed me, and many other persons, that he had in the latter part of his life followed this practice with success."—*Denman*, p. 308.

The same practice has been also recommended by Boer and Asdrubali. I cannot but agree with Drs. Ramsbotham, that this delay is very hazardous; sometimes we can afford to wait, if the operation be performed early, but if we defer extraction too long, we subject the patient to all the risk of a prolonged second stage. This opinion is also advocated by M. Dugès.

[b] Osborne's Essays on Midwifery, p. 221.

to use the forceps, and if this fail, there should be no delay in the performance of embryotomy.[a]

3. These observations will apply equally to the case of morbid growths, ovarian disease, &c., obstructing the passages.

4. In cases of convulsions, ruptured uterus, &c., the time for the operation is determined by circumstances connected with those accidents, and which will be found laid down in works on the subject.

5. In the mismanaged cases to which I have alluded, the condition of the women, which determines the necessity for the operation, will also point out the importance of promptitude. If the case be so bad that we dare not risk a failure with the forceps, it is clear that we cannot afford to delay embryotomy.

Mode of operating.—It is not absolutely necessary to the operation that the os uteri should be *fully* dilated, though it is a great advantage, and greater care will be required when this dilatation has not taken place.

The rectum and bladder are first to be evacuated; the patient is then to be placed on her left side, with the hips over the edge of the bed, and an assistant beside her to fix and steady the abdomen.

One or two fingers of the left hand are then to be introduced into the vagina, and their extremities fixed upon that part of the head of the child which is to be perforated. Contrary to ancient practice, this should never be the sutures, because after the incision is made in that situation, the bones collapse and close it. Having determined upon the situation, the perforator is to be passed along close to the palm of the hand and the inside of the fingers, so as to avoid injury to the soft parts of the mother.

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[a] I have already stated, and I repeat it here, that in cases where the head *cannot* descend into the pelvis, all the symptoms of a prolonged second stage will occur, if the patient be not delivered. The limit between the first and second stages appears to be marked by the *dilatability* of the os uteri.

Having arrived at the point of insertion into the skull, it is to be pressed firmly forwards with a semi-rotatory motion, until it pierce the bone; it is then to be passed in up to the shoulders and the handles are to be separated by an assistant as widely as possible. The cutting edges of the scissors are then to be placed at right angles with the first incision, and again separated, so as to make a crucial incision.[a]

This being effected, the perforator is to be passed into the skull, the brain thoroughly broken up, and the medulla oblongata cut across.

The scissors are then to be withdrawn, and the first part of the operation is completed.

The left hand is again to be introduced, as a guide and guard to the crotchet, which should be passed into the cranium for the purpose of completely breaking up the brain. I dwell upon this point, because instances are on record of the child being born alive after the operation of craniotomy,[b] to the disgrace of the operator, and the distress of the patient and her friends. When this object is attained, if we wish to terminate the operation at once, the crotchet may be fixed on the outside or inside of the head; the former was adopted by the older practitioners, but the latter is recommended generally at present.[c] In some cases it is useful to employ two crotchets—one internally and the other externally.

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[a] Denman's Introduction, p. 306.

[b] Osborn, Essays on Midwifery, p. 235. Burns' Midwifery, p. 499. Med. Chir. Trans. vol. xii.

[c] "Let the demolition be complete—let the brain be converted into a perfect pulp; feel what reluctance you may before you begin this terrible operation—the more the better—but when you have once begun, proceed promptly, without flinching; it is too late to turn back. In demolishing the brain, it is desirable that you should break up the basis as early as practicable—for this part, I suspect, is more immediately connected with vitality . . . . . Never lay the head open unless there is an absolute need for it; but when you do, when you must craniotomize, let all your operations be effectually performed."—*Blundell*, p. 528.

[d] "Some have thought it was of great importance to fix the crotchet on the outside

The scalp should be carefully folded over the edges of the bones, in order to prevent injury to the passages, and then extracting force must be gradually and steadily applied during the pains, or at intervals, in imitation of them.[a]

The left hand should be passed into the vagina, and placed on the head, opposite to the insertion of the crotchet, both for the purpose of steadying it, and of preventing mischief if the instrument should slip. If the part of the skull in which the crotchet is fixed give way, we must obtain another purchase.

The amount of force, and its continuance, will depend of course upon the resistance to the passage of the child, but if after a certain time no progress be made, in order to avoid contusion of the soft parts of the mother, it will be well to break up the skull with the forceps adapted for that purpose.

The perineum must be carefully guarded, and care must be taken that no injury be inflicted by the spiculæ of bone.

After the head is extracted, the body generally follows without much difficulty; but should this not be the case, we must have recourse to evisceration. The scissors must be plunged into the chest, and the contents broken up; the crotchet hooked upon the ribs, and traction exerted. The contents of the abdominal cavity may be evacuated in a similar way, and after this we shall generally be able to extricate the child.

The principal *difficulties* of the operation are as follows:

1. If the bones of the skull be very firm, it is not easy to

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of the head, and others have insisted on the propriety and superior utility of fixing it in the inside; but I am persuaded that such things are of little consequence, and that in the course of a difficult operation, it may be found necessary and useful to fix it in either way."—*Denman*, 311.

[a] "One common error formerly prevailed in this, and too many other surgical operations, founded on an opinion that it was needful to perform it speedily; but it is now proved by experience, and generally acknowledged, that the more calmly and slowly we proceed, the less chance there will be of doing mischief."—*Denman's Introduction*, p. 305.

perforate, and the point of the scissors is very apt to slip. This can only be avoided by great care and steadiness.

2. A similar state of the bones will offer a serious obstacle to the insertion of the point of the crotchet; but a little perseverance will in most cases overcome it. The fingers of the left hand, placed on the outside of the skull, will render it still more easy.

3. The extraction may be difficult. If the narrowing be not too great, the difficulty may be overcome by steady force; but if such a degree as may be exerted with impunity do not move the head, we must then break up the skull as already stated.

The *dangers* to which the patient may be exposed in this operation, are more serious than when the forceps is used.

1. The perforator may slip, and the vagina or uterus be wounded.

2. The hook may slip, or the bone in which it is fixed may suddenly give way; and if the hand of the operator be not interposed, a severe or even fatal rent may be inflicted.

3. The perineum may be lacerated by the injudicious exertion of extracting force.

4. From the condition of the patient, she generally suffers more from the shock to the nervous system, than in the operations previously described.

5. There is also greater danger of subsequent inflammation of the womb or vagina, with perforation of the bladder, especially if much force have been necessary.

After-Treatment.—The nervous shock will best be remedied by quiet, small doses of opium, and moderate stimulation.

The state of the vagina and uterus should be carefully watched, and vaginal injections of warm water used occasionally.

If any symptoms of inflammation arise, they must be met

promptly by the appropriate remedies—venæsection, leeching, calomel and opium, &c.

In other respects, if the patient go on well, she must be treated as after natural labour.

ART. XVI.—*Medical Observations, &c.* By SIR FRANCIS SMITH, M.D., of Paris, Fellow of the College of Physicians, Dublin.

IRREGULARITY OF THE DURATION OF THE FIRST STAGE OF SCARLATINA.

WE are sometimes struck in practice with the very great non-accordance of symptoms, both as to duration and degree, with what is laid down by systematic writers; and junior practitioners must always be glad to have opportunities afforded them for storing their memory with facts irregular in their occurrence, and dissonant from the usual or routine rules laid down by authors. Among such facts may be placed the following:

S. S. a child of three years and a half old, robust and healthy, was exposed to the full infection of scarlatina by communicating freely with his sister, aged six months, who was carried off on the third day after she was attacked, and without throwing out any thing like eruption. The latter was brought to town ill from the country, and died on the third day, not having been previously in communication with her brother. On the day following her death,—that is to say, on the fourth day from the period when the infected child first was brought in contact with the healthy one,—the latter became sick, pale, with a shrunk and quickened pulse, and a disordered stomach; and this state continued for seventeen days, during which period the most gentle possible interference of a medical nature was adopted, with attention to diet, &c., but avoiding all such medication or disturbing influences as could interfere with the

march of the suspected malady; exercise according to strength, and amusements of a childish nature, were not suspended. The long continuance of this state, with disturbed functions, began to give rise to uneasiness; and I consulted with my esteemed and learned friend Doctor Mott, of New York, upon the case, and he advised a continuance in the expectant course which had been adopted. On the seventeenth day the eruption of scarlatina made its appearance and came freely out, the latter stages of the disease running a severe but regular course.

It would be manifestly improper to call the period of seventeen days which elapsed between the appearance of the eruption and the exposure to contagion, the latent period; for from the very commencement there existed the phenomena of fever, and we must therefore consider that period to have constituted the first stage of the malady, and its occurrence as one of the irregularities of disease which it is well to bear in mind as a possible contingency.

This case contrasts strongly with two others which I have lately seen, in which the first stage either did not exist at all, or at least was so faint as to elude the observation, either of the individuals who were the subjects of the disease or of those immediately about them.

Miss E. J., a blooming girl of thirteen years of age, whilst apparently in perfect health, and having, on the morning of the same day, eaten her usual breakfast with excellent appetite, complained of sore throat, and looking very much flushed, with a hot skin, I was asked to see her. When I visited her I found her with the rash of scarlatina already slightly developed, and ordered her to bed,—an order which she very reluctantly obeyed. The case ran a favourable course, and the eruptive stage lasted but the usual period, counting from the day on which I first saw her. Dr. Scott of Bologne saw the case with me.

Miss C., Rue de l'Observation, aged twelve, of a delicate strumous constitution, complained on the 12th of the month of sore throat and pains in the limbs, with headach, &c., having,

up to that day, been in her usual state of health. She was given some slight aperient medicine, and I was asked to see her on the 13th, on which day I found her in bed, with the eruption of scarlatina well developed on the whole of her limbs and body. Her mother, a lady much versed in sick attendance, and a most watchful observer of the health of her children, was quite persuaded that up to the 12th there had been no rigors, no fever, no diminution of appetite or derangement of other functions; the eruptive stage ran a normal course.

I shall but add one more case to the foregoing. Master E., son of Commissary-General E., was suddenly attacked with a violent convulsive fit, in which I was called to see him; no previous history could be obtained in the least calculated to shed light upon the case; the child, about seven years of age, had been in good health till the invasion of the convulsive attack, for which I was called to treat him; under these circumstances I ordered a small bleeding to be made at the arm, and a stimulant injection and warm bath to be administered; and as I was not the family attendant, advised the parents to summon their usual medical adviser. I did not again see the patient, but Mr. Cusack was subsequently in attendance with Dr. M'Munn, and the child, I understood, sunk rapidly without further development of the nature of the disease, but a light was but too soon shed upon the case by the appearance, in other children of the family, of a virulent scarlatina, which carried off, I believe, four children.

The last case is particularly worthy of observation, as it shews an instance of one of the most irregular, and at the same time formidable, shapes in which an eruptive fever can commence; and was, probably, a hopeless case from the beginning, had even its nature been clearly foreseen. A blow had been struck upon the nervous system, under which it was unable to rally; and though the other cases in the family were doomed to end equally fatally, in these, however, no obscurity existed as to their nature.

The above cases by no means include all the anomalies to be met with in the first stages of scarlatina; they will, perhaps, however, tend to bring the young practitioner's mind to appreciate the value of storing up facts, and being ready to apply them extemporaneously in the course of his practice.

THE USE OF POULTICES IN INFLAMMATIONS OF THE GREAT CAVITIES.

Nothing is more remarkable in the practice of physic in France, than the constant use of cataplasms in the treatment of inflammations of the great cavities. The moment inflammation is supposed to exist in the chest or abdomen, the first order given is to apply cataplasms. Where a practice prevails so generally, it is worth while to inquire into its value, and to examine whether its advantages might not entitle it to a favourable consideration, where its use has hitherto not prevailed.

The benefits to be derived from the application of poultices over inflamed cavities, are analogous to those sought from, in their application to other inflamed parts, and may be stated to consist, first, in maintaining the temperature of the parts over which they are applied, and thus giving nature a better chance of effecting the resolution of the existing inflammation; secondly, by their moisture mechanically aiding in the relaxation of injured tissues; and thirdly, by drawing the capillary circulation towards the surface, acting the part of derivatives or revulsives.

That poultices are capable of influencing the contained organs in the great cavities, some have affected to doubt; but yet, few will be found to deny the influence of cold upon the same organs, when applied externally. A moment's consideration would convince any one that organs such as the lungs and pleuræ, the abdominal viscera, and peritoneal coverings, sympathising as they do with their superjacent integuments, and frequently suffering from the accidental application of cold thereto, would be susceptible of considerable modification from the soothing, relaxing, and derivative effects of emollient poultices, applied over

their investing parietes; and that much good effects may be derived from the careful and dexterous application of poultices, I am daily more and more convinced; but I am also persuaded, that upon the mode in which they are applied, much of their good effects depend; and I am free to confess, that a careless or slovenly application of them may, so far from proving serviceable, be productive of great mischief.

The usual material for poultices is the linseed meal; and they are always included within linen cloths. The poultices are generally so large as to cover the seat of inflammation. They should be removed and renewed every three or four hours. Particular attention to the latter circumstance is desirable, as the edges are liable to grow cold, and a disagreeable and dangerous dissipation of animal temperature is the result; and in this and in their weight consist, I think, the principal disadvantages of the system.

In the bronchial irritation attendant upon the exanthematous fevers, poultices to the chest are universally employed; and where any want of energy appears to exist in the system, preventing the coming out of the eruption, cataplasms, consisting of the usual linseed meal, with the addition of a very small quantity, say a twelfth or a fifteenth part of mustard meal, (not flour,) are applied to the feet, and maintained for days together: thus keeping up both the temperature of the extremities, and gently stimulating the skin. The same mixture is also, when necessary, applied to the calves of the legs and thighs—the practice in the latter instances being similar in intention to that adopted in Great Britain; but from the mustard meal being less irritating than the flour, and being used in so small a proportion, the sinapized cataplasms can be longer retained in their situation.

Pleurodynia, diaphragmitis, and many other affections of a painful nature, are likewise treated by poultices; and it is certain, that their effects are often, in such cases, very satisfactory.

NEW PREPARATION OF IRON.

A new and valuable preparation of iron has lately been introduced into practice; and in most cases, where chalybeate medicines are indicated, it possesses advantages over all other forms in which iron can be administered; I allude to the Lactate of Iron. Its superiority would appear to depend partly upon its very great solubility, and partly, perhaps, upon its constituents, and its being more grateful than others to the digestive organs. Its use in private practice here is already very considerable; and from the trials which I have given it in some cases, I am disposed to think highly of it; but its price, which is considerable, renders it as yet unattainable by the poor. The forms in which it is generally administered are the fluid form, in distilled water, or in troches or pastilles; and in many cases, combined with chocolate, in the form of lozenge.

CHOCOLATE.

Though so little used in England, chocolate enjoys a high and increasing reputation on the continent, and is not only made the vehicle of many different medicines, but is very extensively prescribed for children and delicate persons, as an article of nourishment. It is generally eaten dry, sweetened with sugar, and flavoured with many different matters, and formed into sticks or lozenges. Its manufacture is particularly attended to, and the consumption is enormous. Its medicinal introduction into Great Britain is, I think, much to be desired.

SALIVATION FROM IODINE CONTRASTED WITH THAT FROM MERCURY.

In the July number of this Journal I made mention of a case in which I had met with salivation from the use of hydriodate of potass. The fact of salivation occurring from the use of iodine or its preparations is not new: I have, since the publication of the article referred to, met with it in two instances, in one that of a young gentleman using the hydriodate of potass, for a scrofulous necrosis in the bones of the legs; the other

that of a young lady, who, for a glandular disease of the neck, was put under the influence of iodine, administered in the watery solution as recommended by Dr. Osborne, of Dublin, at the rate of a grain to the pint; both had been under the influence of the mineral during nearly four months, and had been copiously salivated, and required mercurial purgations, and the administration of bark for the relief of the ptyalism. In each of these cases the entire absence of fetor of the breath was remarked, as was mentioned to have been the case in that which was recorded in the July number. Now, it is worthy of inquiry, why, when fetor is so constantly found to attend salivation by mercury, none should accompany salivation by iodine or its salts? I believe the difference to depend upon the fact, that in the action of mercury upon the mouth, there is not only an action induced upon the salivary glands, but also upon the mucous membrane of the mouth, from the alteration in the structure of which latter tissue arises the fetor. If the mucous membrane of the lips, cheeks, or gums be examined with a powerful lens, at the period when mercurial action is commencing in them, a species of ulcerative absorption will be observed to be in progress, which, being increased by the continuance of the cause, soon ends in ulcers of greater or lesser size, perceptible to the naked eye. On the contrary, in the salivation by iodine, the principal, if not the only action of the medicine, is directed to the salivary glands; and though I have in one case observed, with great surprise, the teeth to be loosened, I have never been able to discover any thing like ulcerative action to exist in the mucous membrane of the mouth, and upon this peculiar difference in their relative actions depends, I believe, the presence or absence of fetor of the breath during salivation induced by mercury, and iodine or its compounds.

SECRETION OF AIR FROM THE HUMAN SKIN.

I shall now state a case illustrative of a phenomenon which, as far as I am aware, has never before been observed or recorded;

and as I do not attempt to found any theory upon it, more especlally as it, as yet, stands alone, I shall be very brief in what I have to say.

To the majority of my readers it requires no argument to prove, that various tissues in the human body, when in a state of disease, may secrete air. Hunter, J. P. Frank, and Professor Graves, have made statements more or less directly illustrative of my position. The latter extensive and enlightened observer, to whom I am proud to acknowledge myself indebted for much valuable information upon the subject upon which I now write, has seen cellular emphysema occur as a consequence of excessive hemorrhages. He has also seen air accumulated in the chest, as the result of pleuritis; and the ephemeral annals of medicine furnish several instances of the secretion of air in closed cavities.

Whenever animal decomposition or the fermentative process can be considered the cause of the production of the gaseous fluid; it, of course, may be put out of the question; but unless we admit that the mucous membrane of the stomach may occasionally take on the function of secreting air, I know not how we shall be able to account for those large and sudden disengagements of gas from that organ in certain hypochondriacal and hysterical subjects. In the class of persons I allude to, the disengagement of gas is but an occasional symptom, and is generally accompanied with other signs of disordered functions. It generally occurs when digestion has proceeded about one half, or to express it differently, about two or three hours after meals; but it also sometimes occurs when the stomach has been long empty. It is, sometimes, accompanied with a copious secretion of acid; but in, I believe, by far the larger number of cases, when a deficiency of acid in the stomach is observable, and in subjects who are liable to it, it may, and often is, brought on by any disagreeable mental emotion. Its early appearance after fresh food has been taken into the stomach, would forbid the idea, even were we unaware of the antiseptic properties of

the gastric secretions, that putrefaction of the contents of that viscus could have any thing to say to the phenomenon in question. And the occasional occurrence of the symptom when the stomach has long been empty, equally forbids the idea that it owes its origin to fermentation; and besides the extreme rapidity of the disengagement, and the immense amount of the gas evolved, tend to make us reject the idea that fermentation in the comparatively inconsiderable mass of the ingesta could satisfactorily account for the almost alarming amount to which the disengagement in some instances extends. Persons afflicted with the symptom I allude to, in any thing like an exalted degree, may be observed during the existence of the fit to hold their hands pressed upon the epigastrium, whilst discharge after discharge takes place; and should any suspension of the eructations be induced, either by a feeling of shame, hurry or other causes, they complain of a sense of faintness, and even occasionally go off in syncope. These phenomena, I submit, cannot be satisfactorily accounted for by any other supposition than that of a sudden taking on by the stomach of an abnormal secretory process.

In general, pathological physiologists readily admit the faculty of certain tissues to absorb air, with which they have, for a long time, been in contact, and occasionally this absorption occurs with vast rapidity; examples of which are every day to be found in the absorption of effused or rather injected air in traumatic and interlobular emphysema; and it requires but little stretch of imagination to conceive, that where absorbents or veins may take on a process of absorbing a gaseous fluid with which they may find themselves accidentally in contact, so likewise may exhalants be capable of eliminating or secreting a similar fluid, although they, in so doing, take on for the moment an unusual or abnormal function. But the case I am about to communicate was so unexpected and so novel, that I have hitherto abstained from publishing it, in the hope of either being

enabled to make fresh observations on it, or of meeting with others of a similar nature, in both of which hopes, however, I find myself as yet disappointed; and I, therefore, give it to the Profession without comment, wishing that others may supply an explanation for phenomena, which have deeply interested me, but for the explanation of which I feel myself unable to offer any plausible hypothesis.

On the 12th May, 1840, I was consulted by an hypochondriac gentleman, Mr. G. æt. 35, who was labouring under what he chose to term gout, but whose symptoms I recognized for those of biliary derangement; and I prescribed for him accordingly. Amongst other statements, he informed me that he was liable to immense disengagements of gas from the stomach, which he voided by eructation; and he complained of enduring much distress whilst the fit was upon him; that he was also liable to an occasional discharge of air from the urinary bladder, and besides, to an escape of air from his skin, and which latter symptoms he only observed whilst in the bath, of which he made frequent use. I confess I paid but little attention to the latter statement of symptoms; and it was only upon his requiring to know from me the cause of those circumstances, that I thought fit to tell him that I thought that perhaps he might be in error upon both points; and I explained to him how easily he might be misled in his observations. He replied, that he did not despair of convincing me of the facts being as he related them; and thus the matter rested. On the morning of the 15th, I was hastily summoned to see my patient in a bath. He told me, on my arrival, that the reason of his sending for me, was for the purpose of convincing me of the truth of his statements as to the exudation of air or gas from his skin; and as he only occasionally was able to demonstrate it, he lost no time in informing me of its occurrence. I found him in a bath at 79° of common river water (Seine); and upon examining his chest, shoulders, abdomen, and hands, I found him literally covered with small gas bubbles. I inquired of the attendant of the es-

tablishment, if he could account for the circumstance, and he said he had never observed anything of the kind before. I then caused my patient to lift his hands alternately from the water, when, of course, the air bubbles disappeared from those extremities; and on his returning them to the water, and retaining them near the surface, I could plainly perceive bubbles make their appearance, at first very minute, but gradually increasing in size, till they reached that of a pin's head, and the palms of he hands again become coated with them. I caused him to wipe away the bubbles from his hands and chest repeatedly, and in every case they were gradually replaced by others; they ran together, when pushed with the finger, like globules of quicksilver, and could be moved about upon the surface of the hands or body, without quitting them, or becoming loose in the water. These experiments and observations continued nearly twenty minutes that I was present; and towards the end of the bath, the edges of the metallic reservoir were coated all round, but more particularly towards the upper end, where the shoulders had been, for a depth of from one to two inches, with small air bubbles, as if its contents had been charged more or less with carbonic acid gas. Mr. G. also expected to be able to exhibit to me an evolution of gas from the urinary bladder; but on his attempting to do so, was unsuccessful.

I may observe that, to use his own words, he had had a very bad fit of belching when I prescribed for him, and which had given way under the treatment, and much more rapidly than usual,—similar attacks generally continuing more or less during a week or ten days at a time; and on the morning of the 15th he had felt *unusually strong and well,* as he walked to the baths. The next day he started for Weisbaden, in order to make use of the waters of that place for his gout, which I failed in convincing him to have no existence except in his own misconceived notions. I have not since heard from him, and the hopes which he held out of letting me see him on his return from Germany, have not been fulfilled.

Upon the above case, I shall abstain from all comment, save to add, that I went to its investigation, fully convinced that its subject was one of that numerous class of persons who live amidst self delusions ; and that, upon the subject of exudation of air from his skin, he was deceived. I came away convinced that a real secretion of air had actually taken place in my presence, and to a considerable extent, and that from a membranewhich I did not previously believe could, under any circumstances, take on that function.

BIBLIOGRAPHIC NOTICES.

Elements of Chemistry, including the most recent Discoveries and Applications of the Science to Medicine and Pharmacy, and to the Arts. By Robert Kane, M.D., M.R.I.A., Professor of Natural Philosophy to the Royal Dublin Society; Professor of Chemistry to the Apothecaries' Hall of Ireland, &c. Dublin: Hodges and Smith. 1840.

This is a work designed for the use of students, and professes to present a faithful picture of the condition of science at this time; and in place of competing with the great works of Berzelius, Dumas, or Thomson, it is only offered as introductory to them. It is written in a simple style; so much devoid of technicalities as a work of the kind ought to be, without sacrificing the interests of science; it treats of the physical forces merely in the degree they are connected with chemical actions; and being devoted chiefly to those substances which possess an interest on account of their scientific, medical, or economical employment, it will contain but passing notices of bodies that are either rare, or whose utility has not hitherto been discovered. Yet modest and unpretending as are its professions, we have little hesitation in saying, that we believe the publication of this work will constitute an era in the history of chemical science. The first part now lies before us; and we find, not merely the arrangement philosophical, and the descriptions lucid, but we every where discover a profundity of thought, a comprehensive recognition of the analogies of science, combined with an accurate discrimination of distinctions, which evidence the transit of a master mind. This work is a compilation; but it is a compilation which is so thoroughly imbued with the colouring of the author's mind as to have become almost identified with him. Although a compilation, it is not a mere detail of facts, with the additional and dogmatical enunciation of this Professor's hypothesis, or of that Doctor's theory; but every thing is examined with critical acumen,—and facts which we once thought sufficiently familiar, acquire a new interest in our esteem from the novel associations among which we find them.

The first part contains an examination of the relations existing between the chemical and physical forces. This is a design which has hitherto never been completely fulfilled; on the contrary, we have generally found in works on chemistry a series of abstract essays on each of the physical forces; all very excellent in their way, but which had very little to do, as far as we could see, with chemical operations as such. The reason why the necessary and most important connexions between chemistry and physics have not as yet been satisfactorily traced, appears to us to have been, their inherent difficulty. We shall present to the reader a hasty sketch of our sentiments as to the arduous nature of this comparison, previous to the publication of Dr. Kane's book. For the purpose of introducing this subject we shall quote the opening paragraph (p. 1):

"The science of chemistry has its origin in the principle, that the bodies which constitute the external world are composed of a variety of elements, united according to certain laws. If we could conceive an universe consisting only of iron, or quicksilver, or sulphur, the objects of the astronomer might still remain as extensive and as sublime as they are in the actual state of things; for in tracing the constitution of planetary and satellitic systems, or reducing to precise laws the forces by which the motions of the heavenly bodies might be produced, all the resources of his science should still be brought into play. In like manner the physical sciences could attain perfection; for the relations of these bodies to heat, to light, to electricity, the various problems and laws of statical and dynamical forces, could have been known; and thus, all that is essential to the science of natural philosophy might be attained. But not even an idea of chemistry could have been formed. The duty of chemistry is to find the constituent elementary substances, which, by uniting, form the various compound bodies which we observe; to ascertain the nature of the forces by which they unite, and the laws by which their union or separation may be regulated; to trace the effects of their mutual action, in the properties of the new substances formed by their combination, and in the phenomena, independent of composition, which accompany the exertion of chemical force."

Nothing can, at first sight, appear more self-evident than the proposition contained in the foregoing paragraph. If we glance from the land to the waters, and from thence to the firmament, we see ourselves surrounded by such a multitude of diverse-formed things, we behold so great variety of colours, we find so many degrees of consistence among the objects which attract our attention, that it would appear to ordinary intelligence an absurd stretch of metaphysical refinement to require further evidence of a dogma, so easily examined, and so universally

believed. Besides, in every science it is necessary that some things shall be granted as acknowledged truths; and in the science of chemistry what principle will be so generally conceded, being at once agreeable to reason and recognized by our senses, as the belief in a variety of elements constituting our external world?

Still is the saying of Socrates not less true in this, than in the many other instances which serve as the starting posts of human wisdom, "All that we know is, nothing can be known." It cannot be denied, that the existence of different kinds of matter is an assumption which, although more probable than the contrary assumption, (that there is but one kind of matter, which, acted upon by different forces, constitutes so many apparent varieties,) is equally unproved. What! it will be said, do we require arguments to prove a difference to exist between lead and refined gold—the air which we breathe, and the water which we drink? No, gentle reader: we ask not to inflict on you arguments to disprove the evidence of your senses; we admit with you that the differences you observe do exist; but have you a sure foundation for your certainty, that the substances which you call lead and gold, possessing indeed very different sensible properties, are not modifications of the same elementary matter; and on the other hand, are you entitled positively to assert that two lumps of gold, obtained from different sources, however similar in weight, colour, and consistence, are actually identical in essential constitution. The progress of science has shewn that two garnets, precisely similar in colour, form, and other physical properties, may be composed of very different elements; and that sugar and starch, so distinct in solubility, form, and taste, consist of exactly the same elements, united in the same proportions. If, then, we find that identity of physical properties does not necessarily imply identity of composition; and that we cannot, in every case, infer a diversity of constituents from a difference of sensible characters; what means are then left to predicate with respect to identity or diversity? What is to prevent us from extending the analogy of this uncertainty from things known to be compound, to those hitherto undecompounded? Finally, what evidence does there remain to justify us in the belief of a variety of elements, rather than of one identical matter, infinitely plastic, infinitely Proteus-like, yet constant in its modifications?

The art of mineralogy, for it does not as yet deserve the name of a science, presents us with an example of the difficulty of connecting chemical phenomena with physical laws. Hitherto how complete has been the failure of every attempt to classify minerals. If arranged according to their external forms, we

find substances of totally dissimilar composition, placed side by side; while compounds, chemically allied, are necessarily located in groups the most remote. If, on the contrary, they are classified according to their chemical composition, incongruities equally remarkable present themselves before us. Why is it, we may ask, that of three substances so intimately related as chlorine, bromine, and iodine, the first should naturally exist as a gas, the second as a liquid, the third as a solid? Why should hydrogen be the lightest of gases, and iron, which it so exactly resembles in its affinities, be a most refractory metal? With such monstrous discrepancies before us, may we not reasonably despair of ever reconciling a chemical with a physical classification?

In some instances, chemical research has demonstrated an identity of nature to exist between substances physically the most distinct. A most remarkable example of this kind is found in the varieties of carbon. Black, opaque, and without lustre, woodcoal is destitute of the decolorizing property, which is at once so remarkable and useful a characteristic of the charcoal obtained from animal tissues. Transparent, colourless, a bad conductor of electricity, the diamond strangely contrasts with graphite, which, by its opacity, lustre, and conducting powers, presents what are usually considered the essential characters of a metal. Yet, all these substances are found to be but modifications of the one material; all possessing the same combining equivalent; all presenting in their chemical unions, substances having identical properties.

But if in such cases chemistry has discovered an inherent unity among bodies possessed of the most dissimilar physical properties, the limits of her power are nearly approached in other instances, when substances such as selenium and sulphur are with difficulty distinguished by her agency. Resembling each other in some physical properties, these elements unite, in a parallel manner, with other simple substances, forming compounds which, except in some rare cases, are undistinguishable. Is it beyond the bounds of legitimate speculation to imagine, that inasmuch as these elements are so nearly similar, others may exist which cannot be discriminated by chemical means?

We have attempted to shew (feebly, we must confess) the high interest which invests the subjects which Dr. Kane has brought before us. We have seen what uncertainty attaches to the existence of distinct species of matter: we have seen the difficulty of connecting the physical constitution of matter with its chemical properties: we have observed what little dependdence can be placed on physical characters, to enable us to

pronounce as to distinctness of chemical nature, and how probable it is that chemical means are, in some instances, incapable of distinguishing inherent differences: we have, by the consideration of a few topics, illustrated the arduous nature of the task which Dr. Kane has proposed to execute in the present work.

This task consists, (as far as the first part is concerned,) in the consideration of to what extent the physical forces, gravity, cohesion, light, heat, and electricity, characterize chemical substances; the relations of these forces to chemical affinity, and the connexion which exists between the molecular structure of bodies, and their chemical constitution. It were idle, after what has passed, to repeat that these are subjects, in the present state of science, most difficult to treat; but it is only severe justice to Dr. Kane, to say that he has fairly grappled with their difficulties; that he has perspicuously stated all the ascertained facts which bear upon their explanation; that by the excellence of his arrangement, and the clearness of his style, he has rendered matters, in themselves abstruse and scarcely intelligible, comparatively easy; and that, by the logical habits of his mind and the vigour of his understanding, he has thrown a flood of light upon subjects hitherto obscure or unexamined.

The following extracts relate to a subject of extreme interest, namely, the method of taking the specific gravities of gases. After describing the method of taking the specific gravities of liquids, the author says (p. 5):

"Where the substance exists naturally in the state of gas, a precisely similar process may be had recourse to; in place of a bottle with a ground glass stopper, there is used a globe* with a stopcock, capable of holding from twenty to thirty cubic inches. A quantity of air having been removed from the globe, the gas, which must previously be either perfectly dried or perfectly saturated with moisture, is admitted to supply its place, and as the volume of gas which passes in is exactly equal to the volume of air which had been taken out, the relative weights give their densities, and hence the specific gravity of the gas. For suppose that the globe full of air weighed 656 grains; that having been exhausted of air it weighed 647·5, and then having received 28 cubic inches of carbonic acid gas it weighed 660·3 grains. We thus know that the 28 cubic inches of air had weighed 8·5 grains, and that 28 cubic inches of the gas had weighed 12·8, hence the densities are as 8·5 to 12·8, and the specific gravity of the gas, air being taken as 1000, is $\frac{12{\cdot}8}{8{\cdot}5} \times 1000 = 1506$.

* In the original there is a wood cut representing the apparatus.

"This brief description being intended only to explain the principle which the words 'specific gravity' involve, it has been considered as not liable to alteration; but in reality the volumes of bodies, particularly of gases, are constantly in a state of change. According as the air is warmer or colder; according as the pressure to which it is subjected, as indicated by the barometer, diminishes or augments, the volume which a certain weight occupies is altered, and the specific gravity is changed. Hence, when we take air as a standard of specific gravities for gases, we do so only with reference to a certain standard of temperature and pressure, as at 32 on the scale of Fahrenheit's thermometer, and at 30 inches of mercury in the barometer tube. It is only by accident that an experiment might happen to be made at this standard temperature and pressure, and hence it is necessary to reduce the observed result to what the result should have been at the standard points. If the gas be damp it is necessary also to correct for the presence of the watery vapour, and hence the determination of the specific gravity of a gas, although so simple in theory, is in practice a most delicate operation. Under the proper heads of the constitution of gases and vapours, with regard to heat and pressure, the mode of making these corrections will be described."

Turning to page 137, we find the method of correction for moisture.

"If the liquid be in excess, the vapour possesses the elasticity belonging to its temperature; but if there be not liquid enough to form so much vapour, the vapour formed then expands, so as to occupy the entire space, and its elasticity diminishes in proportion to the increase of volume; vapours being regulated by the same law of pressure which holds with gases. If thus, a bell glass of atmospheric air be confined over water, at the temperature of 80°, a quantity of vapour diffuses itself through the air, and, as there is water in excess, the elasticity of that vapour will be 1·00 inch. Now if we suppose the elasticity of the air to have been previously 30 inches, it will become, by the addition of the vapour, 29, for the vapour counteracts one inch of the external atmospheric pressure; the air in the bell glass will then expand, in the proportion of 30 to 29; or, what is the same in practice, the volume of the damp air is the same as the volume which the vapour should occupy, if condensed in the proportion of its own elasticity to the atmospheric pressure, added to the volume occupied by the air when dry. It is thus that the volumes of gases, collected over water, are corrected for the watery vapour that is mixed with them. Thus in the analysis of a substance containing nitrogen, let us suppose that 8·54 cubic inches of nitrogen have been collected over water, at the temperature of 63°, and the barometric pressure being 29·35 inches; at that temperature, the elasticity of vapour is 0·58, and hence that of the dry air is 29·35 — 0·58 = 28·77. The

volumes which they occupy are as these numbers, and hence the 8·54 of damp gas consists of $\frac{0{\cdot}58}{29{\cdot}35} \times 8{\cdot}54 = 0{\cdot}17$ of watery vapour, and $\frac{28{\cdot}77}{29{\cdot}35} \times 8{\cdot}54 = 8{\cdot}37$ of dry nitrogen.

"This volume should still be corrected for temperature and pressure before the quantity of nitrogen by weight could be obtained from it."

At page 19, we find the method of correcting for pressure, which we will now quote.

"The amount to which solid and liquid bodies may be compressed is very small, so much so that very delicate methods are necessary to determine it. Thus it requires a pressure of 400lbs. upon each square inch of the surface of water to diminish its volume by the $\frac{1}{10000}$ part. In gases, however, the repulsive force acting without interference, and the particles being at much greater distances from one another than in the liquid or solid form, the amount of compressibility becomes very much increased, and the law, by which it is regulated, extremely simple, being, that the volume of any gas varies inversely as the pressure upon it; that it is doubled if the pressure be diminished to one-half, and reduced to one-half if the pressure upon its surface be doubled. Thus, supposing a gas to measure 100 volumes under the pressure of 20lbs.

"Then with pressures of	80 .	40 .	20 .	10 .	5lbs.
"The volume becomes	25 .	50 .	100 .	200 .	400

"The gases which are used in chemical operations, are liable to constant changes of volume, from the alterations in the weight of the surrounding atmosphere, by which they are always pressed; and hence, before we can tell how much of a gas we really have obtained by any process, it is necessary to ascertain the amount of atmospheric pressure, and to allow for it. The pressure, which the air exercises, is measured by the barometer, in which a column of quicksilver balances the pressure of the air, and varies in height according as this changes; the height of this mercurial column being accurately measured by a scale applied to the tube of the barometer. In these countries, the height of the barometric column fluctuates between 28 and 31 inches, but the average height of a year is about 29·8 inches. For simplicity, a number very near this, 30 inches, is taken as the standard pressure, and whenever the specific gravity, or the volume of a gas is given, without particular remark, this standard height of the barometer is understood to be the pressure.

"If, therefore, we have a gas at a different pressure, it is usual, and often necessary, to reduce its volume to what it should have been under the standard pressure, or as it is generally termed, to correct for pressure; to do this we use the rule given above for the

change of volume with the pressure. Thus, if in an analysis of morphia, we obtain 4·54 cubic inches of nitrogen gas, when the barometer is at 28·5 inches, we say, that expressing the volume at 30 inches by V.

$$\text{“V : 28·5 : : 4·54 : 30 or V} = \frac{28{\cdot}5}{30} \times 4{\cdot}54 = 4{\cdot}313.$$

“Knowing, then, the weight of 100 cubic inches of nitrogen at 30 inches, the weight of 4·313 is easily obtained.”

Every chemical student is aware that Gay Lussac and Dalton had concluded, from their experiments, that gases expand for every degree of Fahrenheit's thermometer $\frac{1}{480}$ of their bulk at 32°. It appears, however, that this proportion is not exactly correct (p. 85):

“From very numerous experiments, Rudberg inferred, that in being heated from 32° to 212° 1000 volumes of air became between 1364 and 1366·4; we may consider 1365, which is between the two, as being absolutely the most correct, and hence, that for each degree 1000 volumes expand $\frac{365}{180} = 2{\cdot}028$ or $\frac{1}{493}$ of its volume at 32°.

“In all operations upon gaseous mixtures the rate of expansion of air comes into play; for as all gases expand alike, and that the vapours, even of those bodies which are least volatile, as camphor and corrosive sublimate, expand, whilst in the elastic form, precisely as gases do, their volumes are corrected for temperature and pressure in the same manner. In determining the specific gravity of a vapour, it is also usual to reduce it to the same standard as those of gases, that is, air at 32°, even where the substance is of such a nature, as that at 32° it may not produce any sensible vapour at all. In doing so it is assumed that the vapour should, in cooling to 32°, follow the same law as common air, and hence an error, even though very slight, in the rate of expansion of air, might lead to incorrect results in many cases.”

“The application of such corrections follows very simply from what has been described. If there be a certain quantity, as 155 cubic inches of hydrogen gas at 142° Fah., and that we wish to know the volume there should be when cooled to 32°, we say that, as 142° is 110° above 32 the 155 cubic inches are equal to the volume at 32°, and in addition to $\frac{110}{493}$ of it; that being the quantity by which it is expanded from 32° to 142°. Therefore denoting the volume at 32° by the letter V, there is the equation:

$$\text{“}155 = V + V\,\frac{110}{493} \text{ or } V = \frac{493 \times 155}{493 + 110} = 126{\cdot}5.$$

129·5 cubic inches are, therefore, the volume at 32°.

“If, on the other hand, we have a gas at a low temperature, and we wish to ascertain what its volume should be at 32°, it is evident that the mode is the same, except that in place of substituting the amount of expansion we add it to the original volume. Thus, if the 155 cubic inches of hydrogen had been at 6° Fahrenheit, then the equation should have been 32° — 6° being 26°.

$$\text{“}155 = V - V\frac{26}{493} \text{ or } V = \frac{155 \times 493}{493 - 26} = 163{\cdot}6$$

cubic inches in exact numbers.

“It frequently happens that it is necessary to reduce a gas at one temperature to its volume at another, neither of which being 32°, it would require two different sums to be worked, by the above process. But it may be effected as follows, by a single calculation.

“The volumes, at the two temperatures, are to one another in the same proportion as the standard volume, 493, increased by the amount of expansion proper to the temperatures. Thus, at the temperatures of 75° and 42°, the standard volume, which is 493, at 32°, becomes respectively 536 and 503. Now, any volume of gas, when heated from 42° to 75°, or cooled from 75 to 42, changes its volume in these proportions; and hence, if we have, for example, 127 cubic inches of a gas at 75° and that we wish to calculate its volume when at the temperature of 42°, we say, calling the unknown volume, V:

$$\text{“}V : 127 :: 503 : 536 \text{ and } V = \frac{127 \times 503}{536} = 119{\cdot}2.$$

“The formulæ for these corrections may be very simply written in a general form: thus, to reduce a volume to 32°, denoting the temperature of Fahrenheit's scale by t; by V the volume of gas which we have measured at that temperature; and by V_1 the volume at 32°, the formula is

$$\text{“}V_1 = \frac{493 \cdot V}{493 \pm (t - 32°)}.$$

“And to reduce, without reference to 32°; denoting the known volume by V, and the unknown by V_1; the temperature of V by t, and that of V_1 by t_1, there is found

$$\text{“}\frac{V_1}{V} = \frac{493 \pm (t_1 - 32)}{493 \pm (t, - 32)} \text{ and } V_1 = V\frac{493 \pm (t_1 - 32)}{493 \mp (t - 32)}\text{”}.$$

We need not apologise to those who are really anxious to learn chemistry, for the length of the foregoing extracts; those gentlemen misnamed students, who limit their ambition to the passing of some particular examination, ought likewise to thank us, for presenting to them the means of solving a very ordinary problem; and the educated chemist will agree with us in admiring the exactness and clearness of the above description.

The next subject to which we are about to direct the reader's attention, is that of “crystallisation.” This is treated in the same masterly style, and by a happy combination of strict science, methodical arrangement, and clear description, this bugbear to chemical students has been rendered accessible to the most ordinary intelligence.

“Notwithstanding the immense variety of forms of crystals

which exist, they may be reduced to a very few classes, by conceiving them to be formed by their particles being built up around certain axes, which pass through the centre of the crystal, and the relative position and magnitude of which determine the manner in which the particles are arranged. In this way there may be formed six systems of crystallization, characterized as follows:

"1st System.—*The Regular System.* The three axes are all equal in length, and are at right angles to each other.

"2nd System.—*The Rhombohedral System* has three axes equal in length, which are placed, however, at equal angles (60°) with each other, and are all in the same plane, whilst a fourth and unequal axis is at right angles to that plane.

"3rd System.—*The Square Prismatic System* has the three axes at right angles to each other, but there are only two of them equal, the third is either longer or shorter than the other two.

"4th System.—*The Right Prismatic System* has the three axes at right angles to each other, but there are no two of them the same length.

"5th System.—*The Oblique Prismatic System* has two of the axes making an acute angle with each other, whilst the third is placed at right angles to both. The three axes are all unequal in length.

"6th System.—*The Doubly Oblique Prismatic System* has all the axes unequal in length, and making acute angles with one another.

"The various actual forms of crystals, both primary and secondary, are derivable from the manner in which the plane surfaces of the crystals may be applied, around these axes. In order to conceive the application of the planes, the axes shall be considered as placed, with one in a vertical position, and it is called the principal axis. The nature of the system determines which axis should be selected."

We must refer to the work itself for the application of this classification to the different forms of crystals; and we regret being unable to present to our readers the concise, but most instructive, explanation of the connexion between double refraction and polarization, and the several systems above defined. Where all is so interesting, we must be chary in our extracts; but we cannot resist the temptation of quoting the following:—

"Substances may assume crystalline forms, which do not properly belong to them, in many ways. Thus, a group of crystals being imbedded in a rock, they may, by the filtration of the water of springs across the rock, be dissolved out, leaving a hollow mould of their form; and subsequently, substances of another kind may be introduced into this cavity, and solidifying there, may simulate the external form of the original inhabitant. But these are no more real crystals than a mass of plaster of Paris, which has solidified in a hollow mould, and comes out as an Apollo's head, can be said to have so crystallized. By cleavage, and

by the operation of polarized light, the unsuited internal structure is recognized, and the crystal is stated to have been merely *pseudomorphous.* Another mode in which a body may come to have a form not its own, is by remaining behind after the decomposition of the substance which had really crystallized. Thus, when hydrated chloride of copper, which crystallizes in fine green prisms, is carefully heated, the water is expelled, and the chloride of copper remains dry, and of a fine yellowish brown colour, in the original crystalline form, and with the surfaces quite bright. The red iodide of mercury combines with ammonia to form a substance which crystallises in long prisms of a snow-white colour; these, when exposed to the air, lose all ammonia, and the iodide of mercury remains behind, pure, and of a brilliant red, but with the perfect figure, and bright, smooth surfaces, and sharp angles, of the body originally crystallized.

"It has been thought that the presence of foreign bodies in a solution, even where they did not enter into combination with the substances which crystallized from it, might modify their form. Thus, when common salt crystallizes in a solution of urea, it is deposited in octohedrons, and by dissolving alum in a solution of urea, it may be obtained crystallized in cubes. But in this case, the substances which crystallize are no longer common salt nor alum, but the one a combination of urea with common salt, and the other a basic alum, produced by the mutual decomposition of the urea and the alum. The presence of a trace of lead or tin in a large quantity of iodide of potassium, has been supposed to modify its form; but it is more likely, that the mechanical presence of an impurity of the kind may be supposed to produce a tendency to macled crystals, and thus the external form be somewhat altered, although the true constitution of the crystal may remain the same.

"Certain bodies, when they exist together in solution, may, however, remarkably modify each other's form, by crystallizing together so completely, that every individual crystal shall contain a quantity of each. Yet these bodies will not have combined chemically with each other, for the quantity of each present, in each crystal, is quite indefinite; they are mixed together mechanically in the crystals, and hence the form of the actual crystal is intermediate between those which the separate bodies should have had, if they were pure. In order that bodies may so crystallize together, it is not only necessary that they should be of the same crystalline system, but the crystalline forms must resemble one another very closely in all their angles and sides. Thus, not only will iodide of potassium and sulphate of soda, which belong to different systems of crystallization, not crystallize together, but glauber salt and carbonate of soda, which do belong to the same system, will not crystallize together, because the relations of their angles and sides being completely different, they cannot mix together so as to form an uniform solid. But sulphate of zinc and sulphate of magnesia belong not merely to the same crystalline system, but they are almost identical in their figures; the eye cannot make any distinction between their crystals; and hence, when a crystal is being formed in a solution containing

these two bodies, the molecular and crystalline forces being the same for both, they concur in the building of the crystal without interfering with each other. Hence, as there is a very small difference between the angles of the rhombic prisms of the two salts, the one being 90° 30′, and the other 91° 8′, if they be mixed in equal proportions in the crystal, its angles must be 90° 49′. Carbonate of lime and carbonate of magnesia are, like the sulphates of zinc and magnesia, almost identical in crystalline form, and they exist in nature mixed together, forming the dolomite or magnesian limestone. The quantity of carbonate of lime is to the quantity of carbonate of magnesia as 50·6 to 42·8; and as the angle of the rhomb of carbonate of lime is 105° 4′; and that of carbonate of magnesia is 107° 40′; the angle of the mixed crystal is found by multiplying the angle of each constituent by its quantity, adding these products together, and dividing by the quantity of the mixture, and the result is 106° 15′, the angle of the rhombic crystal of magnesian limestone."

The study of heat abounds with interesting phenomena; and the importance of this force in chemistry has been recognized since the first application of human thought to the subject. One of the elements, according to the Aristotelian hypothesis; and the great agent in chemical change, in the theory of Phlogiston; heat attracted an equal attention upon the promulgation of Lavoisier's beautiful though erroneous theory of combustion. The identity of caloric with the cause of repulsion has been long acknowledged, and, certainly, there exists a great weight of evidence in favour of such an opinion.

"This power of repulsion which we suppose heat to exercise, in causing the transition from one state of aggregation to another, as well as the expansion which occurs without change of form, may become directly evident to the senses, at least in a partial way, in many cases. Thus many powders, if sprinkled on a warm capsule, or still better, on a silver plate, are thrown into violent motion, and dissipated by the mutual repulsion of their particles, independent of any currents of air which might affect them. When liquids, particularly alcohol and the oils, are brought to boil, the drops which are mechanically thrown up out of the liquid, do not mix with it on falling back, but roll about on the surface, and appear to repel each other, and to be repelled by the hot glass of the vessel in a remarkable degree. If a brass poker, strongly heated, be allowed to rest against a cold iron bar, or still better, if a rounded bar of brass be made very hot and laid upon a flat block of lead, the surface of the cold metal becoming heated, repels the warmer brass, which instantly falls down again, by its weight overcoming the repulsion, when the metal cools. When the brass again touches the metal or lead the latter is again heated at the point of contact, and again there is repulsion succeeded by a new contact, and these repeated motions throw the bar of brass into a state of tremulous agitation, which being conveyed to the ear by the inter-

vening air,' gives a remarkably distinct and agreeable musical tone. The better conductor, the heated body, and the worse conductor (of a metal) the cold body can be, the more successful is the result.

"This force of repulsion is made still more distinct, and even measurable, by an experiment devised by Powell. When a flat and a convex glass plate are strongly pressed together, they still do not touch, but are separated by an exceedingly thin space, by the action of light on which there are produced coloured rings, like those seen on the surface of a soap bubble, or in a film of oil floating upon water. Each colour belongs to a distinct and measureable thickness of this space, and when such an apparatus is gradually heated, the rings close in towards the centre, showing that the glass plates recede from one another, and the degree of repulsion may be determined from the narrowing which occurs in the breadth of any particular coloured ring, according as the temperature rises."

Allowing the force of these arguments, there still appear to be some facts scarcely reconcileable with this doctrine—for example when a carbonate effervesces with an acid, the elasticity of the gas cannot be said to depend on the absorption of heat; but rather, caloric is absorbed because the carbonic acid becomes elastic. Again, if heat be the cause of repulsion, ought there not to be some connexion between the melting or boiling point and the quantity of matter which a mass contains? But gold, whose specific gravity is 19, melts at a lower temperature than iron, whose density is 7·8; and although ether, alcohol, water, sulphuric acid, and mercury, boil with temperatures varying with their densities, still it is impossible to reduce them to any law; sulphuric acid, which is not twice as specifically heavy as water, boiling at a temperature, a very little beneath mercury, whose density is 13·5. If we examine the amount of expansion in liquids, we find similar incongruities; thus, nitric acid expands much more than ether for equal increments of temperature. In a similar manner, among solids, lead expands more than silver, gold than iron. Lastly, how is it possible to reconcile the identity of heat with repulsion, when we find the specific heats of vapours less than those of the liquids from whence they are derived. We throw out these speculations because it is possible they may suggest a new method of investigation, with respect to these puzzling subjects. But notions so crude could not for a moment be permitted to occupy a station in science; and, therefore, Dr. Kane has very properly restricted himself to the statement of facts and principles generally received.

In a work like this, where every page teems with interesting and important matters, it is exceedingly difficult to select extracts for a review. Another cause of difficulty in the present case is, the intimate manner in which the different subjects are interwoven, the one paragraph introductory to, and explanatory

of, the next. We are, therefore, forced to pass over many things which we might otherwise wish to present to our readers; but we feel the less regret, inasmuch as, from what we have already shewn, we think our readers will agree with us, that few persons interested in chemical science will willingly deprive themselves of the pleasure and profit to be gained by a perusal. We cannot pass, however, without allusion, the theory of galvanic electricity brought forward by Dr. Kane; a new theory we were about to say; but no, it is simply an expression of facts, leaving out all irrelevant and hypothetical matter.

The relation existing between electricity and affinity is the subject of a peculiarly interesting chapter. Dr. Kane, with truly philosophical caution, avoids deciding dogmatically on this very obscure subject. Without denying the extraordinary analogy which has been found to exist between the operations of electricity and those of chemical affinity, he does not think it sufficient to warrant the conclusion of their identity.

"The influence which electricity thus exercises upon affinity, and the modifications in its results, producible by its means, although proving a most intimate connexion, do not go, as I believe, so far as to demonstrate a complete identity of cause. It is possible that, hereafter, some sublime generalization may embrace the phenomena of heat, of light, and of electricity, of cohesion, and gravity, as well as of chemical affinity within one law, and indicate how, by varied manifestations of a single agent, their separate peculiarities may arise; but though we may look forward to such a state of science, we dare not rashly seek to anticipate its approach, and I look upon electricity as producing, and being produced by chemical phenomena, precisely as we find heat to influence as well as to be evolved by chemical combination."

We find the author adopts, to a certain extent, the views of Graham, (*vide* p. 325.) The theory of the latter philosopher is fully developed in page 341 of his Elements of Chemistry. We find it to be founded upon three postulates—namely, *the binary constitution of salts; the salimolecular structure of metals;* and *the rotal action of chemical affinity;* and divesting it of its peculiar hypothetical phraseology, it appears to suppose certain properties of chemical affinity, such as a power of induction and conduction, that closely ally it to electrical action. These views are, we think, not original—for, in referring to Mr. Donovan's essay on Galvanism, page 355, we find opinions which very closely approach to those of Dr. Graham. We shall quote some of Mr. Donovan's essay to demonstrate this similarity of opinion.

"It appears, therefore, that cohesion, caloric, and light, exert different powers as the circumstances vary: in some cases they

oppose, in others they promote affinity. There is one other force which in both properties seems to agree with the preceding: a force which has never been traced as to its uses in the economy of nature, but which, from its astonishing attributes, cannot be supposed inactive in the constitution of matter. Experiment indeed, proves that this power called electricity greatly influences affinity: it is known to separate combined elements from each other; and after the separation, the affinity of the same elements may be called into action by electricity, so as to effect a new combination. Thus a striking analogy obtains between these four forces, cohesion, caloric, light, and electricity. If one be considered an antagonist to affinity, so must the rest, and therefore electricity, which is the more immediate subject of the present inquiry."

A little further on he says,

"From these instances it appears that the exertion of chemical affinity disturbs the repose of electricity; and these, and the considerations already adduced, render it probable that affinity and electricity are really antagonist forces. In laying down this position, there seems to be but little of hypothesis; and if any, it lies perhaps rather in the words than in the thing; for it is merely another expression of the fact, that the exertion of one power calls the other into action; and this is a true inference from observation."

And again,

"If then it be admitted that affinity and electricity are antagonist forces, and if affinity acquired by any body disturb the electricity naturally residing there, so as to cause it to assume an active form, it is no less probable that, conversely, a great intensity of electricity should disturb the natural affinity, so as to cause it to assume a state of activity; for antagonist powers ought mutually to disturb each other, as is the case with affinity and heat. When affinity acts, heat is expelled; and heat seldom operates without affecting affinity. In a galvanic series, the most energetic of all affinities is transferred to the polar wires, as is proved by their power of decomposing the most refractory substances; yet a very feeble electricity is produced. Now, if such an intensity of affinity can only eliminate so feeble an electricity, it should happen that a very high intensity of electricity should be required to excite a very feeble affinity. This is accordingly the case."

The above quotations from Mr. Donovan's work, published in 1816, are remarkably in accordance with the opinions of the present day. But, it appears to us, on the contrary, impossible to deny the identity of electricity with affinity, unless we suppose the latter to be a force exactly resembling the former, in its capacity of attracting dissimilar kinds of matter; of being capable of induction and conduction. The presence of potash will pre-

vent iron from rusting, and surely this is sufficient evidence of affinity, possessing inductive powers. The chief differences between affinity and electricity appear to be the facility with which we can recognize the latter by electroscopes and galvanometers; the tendency which it has to accumulate on the surfaces of bodies; and the neutralization of opposite electricities when brought in contact. At the same time, analogous dissimilarities exist between latent and radiant heat. If we find a difficulty in understanding the accumulation of so self-repulsive a force as electricity within the substance of a conductor, neither can we comprehend a similar phenomenon with regard to latent heat. The impossibility of detecting affinity by an electroscope is parallel to the insensibility of the thermometer to latent heat. In fine, the magnet is a startling instance of a conductor remaining excited, for an indefinite time, notwithstanding the presence of both electricities.

We have so far transgressed the limits usually allotted to a review, that we must now pause until we have an opportunity (most likely in our next number) of examining the remaining parts. It is unnecessary to recommend this work to our readers; we have afforded to them some imperfect means of judging of its merits; but such a work as "Kane's Elements of Chemistry" needs no extraneous support. Every student anxious to acquire chemical knowledge, every professional man desirous of keeping pace with the rapid progress of the science, will, we feel assured, hasten to procure this, undoubtedly, the best manual ever published on this important subject.

JOHN ALDRIDGE.

An Address to the Medical Practitioners of Ireland, on the Subject of Vaccination, &c. 2nd Edition. By SAMUEL B. LABATT, M.D., &c. &c.

THE respected author of this work could scarcely have conferred a greater boon on the Profession than its republication at the present time, when no small anxiety has been excited in the public mind of this and other countries by the questions which have been raised as to the continued efficacy of vaccination. It was not unnatural that the inquiry should be set on foot; the cases which now and then occur of individuals taking the small-pox after real or supposed vaccination, were sufficient grounds for investigation.

We never felt the slightest doubt as to the result, and we conceive the public may now rest perfectly satisfied, that with a

few exceptions, vaccination is a safe protection against the small-pox.

There is a cause of failure, however, which ought to be pointed out, as it will, in all probability, bear some relation to the extent of vaccination, and that is, the mistaking false pustules for the true. This, of course, can only be remedied by the employment of well qualified vaccination. Dr. Labatt has given a beautiful and very accurate plate of the true vaccine pustule in three stages of its progress, which will form a very good standard of comparison.

The first part of Dr. Labatt's work is occupied by a sketch of the history of cowpock, and the latter part by practical observations, with an appendix of communications.

We shall give an extract from the practical portion of the work, and then proceed to notice the appendix, which is of great importance. The extract is the author's description of the "*local appearance and progress of inoculated cowpock, under its most perfect form.*" (p. 75.)

"About the third or fourth day, that on which the operation was performed included, a small red pimple appears; and on passing the finger over the inoculated part, a degree of hardness may be felt. On the fifth day a vesicle is formed, of a light pink tint, often with a shade of blue, which gradually changes to a pearl colour; the vesicle continues to enlarge, developing its characteristic appearance, until the eighth day, viz., spreading, yet preserving a shape perfectly circular, if the operation was performed by puncture, or oval by scratches; it goes on increasing in size, until the eleventh or twelfth, when it usually arrives at its acme, its diameter being about two or three tenths of an inch. At this period the appearance of the vesicle is very characteristic; semi-transparent, depressed in the centre, with a tinged, shining, wheel-shaped, and somewhat streaked margin. The structure is cellular, but unlike the common cellular membrane, its cells do not communicate; hence we are obliged to puncture it in several places in order to obtain a supply of lymph. One-half of a vesicle has been torn off by violence, while the remainder, owing to its cellular structure, retained its contents, which could not be the case if the cells communicated. About the ninth or tenth day, an erysipelatous efflorescence appears, denominated *the areola*, which gradually extends from the vesicle as a centre, to the size of a crown piece, of a deep rose colour, and of an increased intensity the nearer the vesicle, gradually shaded off into the surrounding skin, upon the surface of which it seems to lie, as has been well remarked by Dr. Cappe, of York. This inflammation advances with the progress of the vesicle, (often attended with a considerable pulsation in the part, and a remarkable ebbing and flowing, as it were, in the intensity of its tint,) and arrives at its height at the same time. It is accompanied with a considerable degree of tension and hardness, which is great-

est contiguous to the vesicle. Some degree of hardness may often be felt in the skin, before any areola is observed. When fully formed, the vesicle appears very turgid, still, however, preserving the central depression, and its colour becomes darker, sometimes approaching to a blue or purple tinge.

"After remaining nearly stationary for a day or two, the areola fades away, generally commencing from the centre, so as to leave a florid ring, corresponding with its margin, but which also soon disappears. The hardness declines with the areola; an amber-coloured crust, which had begun to form in the centre of the vesicle about the tenth day, extends gradually to the circumference, becoming darker as it increases, until, in a few days, the vesicle is converted into a hard, glossy, and semi-transparent scab, of a deep mahogany colour, which exhibits a concave surface, like the vesicle itself, but more contracted. The conversion of the vesicle into crust is a tardy process. The desiccation commences in the centre, and proceeeds so slowly to the circumference, that it is seldom completed before the 18th or 20th day, previous to which some fluid will be found often at the margin of the vesicle. When the crust falls off, an indelible circular or oval pit remains, of a lighter colour than the surrounding skin, and marked with minute indentations, like pin-holes, corresponding with the cells of the vesicle, characteristic of the true vaccine cicatrix; though the character, dimensions, and foveolous appearance, may be altered by rude treatment of the vesicle, without lessening the protective influence, still I should look with some suspicion on the case, when they are absent. I felt more confident, however, upon this point twenty years ago, than I do at present. I now know that the presence of the characteristic cicatrix is not a certain proof of constitutional security, nor its absence of the contrary."

This quotation will give our readers a good idea of the style of the work before us. The value of the information may in some sort be estimated by recollecting that it is the production of one of the most distinguished and experienced of our practitioners, and who, for near forty years, has been Secretary to the Vaccine Institution in this city.

After this statement we feel it almost an impertinence to recommend the book to our readers. If they act in accordance with our opinion of its merits, they will one and all procure it for themselves; and then, if they will turn to the *Appendix*, No. I., they will find the testimony of sixty-eight practitioners, the most distinguished in the country parts of Ireland; and in No. II. reports from fifteen public institutions, and fifty practitioners of Dublin, to the effect that the occurrence of small-pox is comparatively rare since the introduction of vaccination; that small-pox after vaccination occurs but seldom; and that these instances are not unfrequently owing to a false vesicle having been mistaken for the true one; and lastly, that the cases in

which it really occurs, after true vaccination, suffer far less, and are less fatal.

These conclusions, we may say, are inevitable, from the testimony collected by Dr. Labatt; and we conceive the public are under no small obligations to him for thus relieving their fears.

Remarks on the Surgical Practice of Paris. By W. O. Markham.

We have read this work with considerable interest. The author gives, in a short space, a comprehensive and, we believe, accurate sketch of the present state of surgical practice in Paris. He mentions the names of most of the eminent surgeons in that city whose cliniques he has attended, and whese opinions and treatment of many important surgical diseases he has given detailed accounts of.

At the commencement of his work, Mr. Markham speaks of the prevalence of erysipelas in the Parisian hospitals. This sometimes rages with violence in an epidemic form; but he states, that at all times it is more or less constantly to be seen in the wards of those institutions. This our author attributes, in a great measure, to want of cleanliness, ventilation, &c.; and also to the circumstance, that no operation is ever delayed on account of the presence of this affection in the ward or hospital; and to this circumstance he attributes its greater prevalence more particularly in the wards of M. Blandin, who has great confidence in his peculiar mode of treating erysipelas, arising from injury or wounds; and which consists in the application of a great number of leeches in the course of the lymphatics, between the part affected and the trunk; as, for instance, if the injury was in the lower extremity, the leeches should be applied to the groin, if the arm to the axilla. This practice is founded on the opinion held by M. Blandin, that the erysipelatous inflammation of the skin is *always* preceded by inflammation of the lymphatics. Mr. Markham has seen many cases in M. Blandin's practice, proving the efficacy of this practice; but thinks, at the same time, that M. B. relies too exclusively on this treatment, and frequently carries his depletion too far.

In speaking of the treatment of abscess by M. Lisfranc, Mr. Markham mentions that this surgeon, in some species of abscess, which appears to be what we call chronic, is in the habit of dissecting them out, cyst and all; and the same mode of treating fistula in ano is adopted by M. Roux, who, after dividing the

sphincter, dissects out all the indurated parietes of the fistula, leaving an enormous wound, which is stuffed with charpie.

We are, equally with Mr. Markham, at a loss to conceive on what good principle MM. Lisfranc and Roux adopt this treatment of abscess and fistula.

Our author, in speaking of the treatment of hydrocele, mentions having witnessed several unfortunate accidents in the performance both of the palliative and radical cure of this disease; but these accidents are not peculiar to French surgery; but the routine practice of M. Roux and Blandin, of injecting the tunica vaginalis three times, at intervals of three minutes, irrespective of the temperament, age, or sensations of the patient, is, like most other examples of routine treatment, absurd.

In the treatment of confirmed anchylosis, Mr. Markham had an opportunity of witnessing the effects of M. Louvrer's treatment, which is to forcibly extend the limb by means of powerful machinery. In this operation, not only old adhesions are broken up, but ligaments are torn, muscles and tendons ruptured, and in many instances even nerves and arteries. According to the experience of Mr. Markham,the consequence of such practice is, as we should *expect,* disastrous in the extreme. It is right, however, to mention, that this practice is discountenanced both by Blandin and Lisfranc; and our author mentions having seen cases of anchylosis treated successfully by both these surgeons, by means of *gradual* extension. Our limits will not allow us to enter much further into a detailed analysis of Mr. Markham's observations; a few more, however, may be noticed.

In the treatment of fracture, he gives his most unqualified praise to the use of the starch bandage,which he thinks is applicable to all cases of simple fracture, after inflammation has subsided; and, speaking of this practice, he says, in page 70,

"I should say (with deference) that, according to my judgment, it is one of the greatest acquisitions to modern surgery."

We certainly think that this mode of treatment is too much neglected by English surgeons.

In amputation, it would appear, that none of the Parisian surgeons, with the exception of M. Blandin, ever attempted the union of the wounds by the first intention, the regular practice being to stuff the wound with charpie, and the frequent failures where union by the first intention is tried, is produced by the presence of the "ever-existing erysipelas" in the Parisian hospitals.

We cannot agree with Mr. Markham, in his condemnation of the circular, and great preference of the flap operation. For

our own part, we prefer the circular, for many reasons, and do not think the worse of it, merely for its being the "ancient method." Nor do we at all join in our author's surprise at M. Blandin preferring amputation of the arm to extirpation of the elbow joint,—an operation which we have seen repeatedly to fail miserably, even in the hands of Mr. Symes.

Our author concludes his work by a highly interesting and perspicuous analysis of M. Ricord's opinions on syphylis; and we cannot help quoting one remark of this distinguished observer of disease, who, while speaking of the appearances which mark a true chancre, says, "that from all these signs, we can draw no absolute diagnosis." With the truth of this we have long been convinced; and acting on this opinion, have been saved from many unprofitable investigations.

There are many most interesting subjects handled by Mr. Markham, to which we have not space to allude, and would therefore strongly recommend the perusal of this interesting little work to those who devote themselves to the study of surgery.

G. S.

A Short Treatise on Typhus Fever. By George Leith Roupell, M. D., Physician to St. Bartholomew's Hospital, &c. &c.

Doctor Roupell endeavours to establish a doctrine, that typhus fever, or the common contagious fever of this country, and of every other country in Europe, (for there is no great difference if the description of this fever by continental physicians, German, French, and Italian, be accurately examined and compared with each other,) belongs to the exanthemata of the nosologists. He seems to think himself sustained in this opinion, by Hildenbrand, whose work on fever he has studied with great attention. Such a doctrine is not tenable, because the disease is well known to run its whole course, in many cases, without any exanthematous eruption whatever.

There is no doubt that every species of the exanthemata may appear, and often do, in the course of the disease. His own quotation from Huxham shews, that there is no eruption peculiar to this fever: "Pustulis, papulis, aut maculis cutem deturbantibus, febris lenta stipata." And again, "Papulæ rubræ floridæ copiosæ aut plurimæ pustulæ miliares turgidæ statu morbi erumpentes bona presagiunt."

He states that he has found erysipelas a frequent occurrence. It certainly does occur occasionally, like some of the other ex-

anthemata, but he does not pretend that it characterizes the disease. His chapter on the contagious or infectious nature of the disease is very able, and he treats the subject with great candour and justice. We believe that in this day there are not many who will deny that the common fever of this country propagates itself by contagion, let its origin be from what source it may. Certainly, it often arises from cold, from fatigue, and from internal causes not well understood. Whatever the observations of Hildenbrand and Chomel have led them to conclude to the contrary, there is no doubt but that all of us are liable to the disease, from the youngest children to the oldest persons, male and female. The morbid appearances found upon dissection by him correspond with those recounted by Chomel. Marks of congestion or inflammation, or both, have been found in the brain, in the lungs, and in the intestines. Chomel has often found the lungs in a state of congestion, a circumstance not mentioned by Roupell. He constantly, throughout the work, states any fact that he imagines will corroborate his favourite doctrine, that typhus belongs to the exanthemata ; and, among others, he states that typhus shares with other eruptive disorders a tendency to the formation of pus: now this is a rare occurrence in this country, though it is sometimes a sequela of fever. Hippocrates, speaking of fevers, says, "Quibus ex morbo resurgentibus aliquid dotit ibi abscessus fiunt." We hope Dr. Roupell is not one of those who affect to set no value on the labours of the nosologists ; and therefore trust he will attend to what Sauvages says upon the subject of typhus, as far as regards the exanthemata, which ought to set the matter at rest. "Differt a morbis exanthematicis ex eo quod exanthemata in typho vel regimine calidiori inducantur vel nonnisi in statu morbi supervenirent. In exanthematicis uno irruptiones miliares, maculosæ, rubeolosæ, bubonosæ, &c. ante *statum* morbi etiam prorumpunt." The following observations are truly valuable, do great credit to his judgment, and are well worthy of the attention of the Profession :

" A theory which ascribes the origin of typhus to the operation of a specific poison, producing a series of morbid actions, and provoking inflamation of modified characters, must at least be less injurious in practice, than that doctrine which ascribes all the processes of this fever to so inefficient a cause as debility. The terms adynamic, ataxic, and asthenic, are still daily applied to typhus, and shew that the erroneous doctrines which formerly obtained meet supporters at this day. They are indeed specious. So deceitful is the aspect, and so depressed are the feelings of a patient, that unless acquainted by experience with the consequences of acting

upon this notion in the earlier periods of the disease, we are likely to fall into the fatal errors which result from the theories of Brown. A moment's reflection must satisfy all that no degree of weakness is capable of producing the symptoms of typhus; when weakness does occur, it must be a consequence; and we have, in our treatment, to obviate its effects; but he slumbers on a volcano who does not see in this fever the tendency to inflammatory action, and all the results of a modified condition of that state. He who attributes all to debility, must refer to this alone, the various processes which I have shewn to arise, such as consolidation of the lungs, inflammation in every organ, alteration of mucous membranes, adhesion of serous ones, and the universal effusion of pus. The discoveries of modern pathologists, who find in most cases essential change in all important organs of the body, must alone overthrow the doctrine of mere debility."

He very ably combats the doctrine of Broussais, that typhus depends on inflammation of the mucous membrane of the stomach and intestines. It is a just and very important observation, that the suffusion of the conjunctiva indicates the state of the circulation within the cranium, for in proportion as remedies relieve the state of the frame, the suffusion disappears, and its disappearance is always a favourable symptom. In the treatment his observations are most judicious on blood-letting, both general and local; and also, on the use of emetics and purgatives. He specifies the three different conditions, during the continuance of which the specific action of mercury is clearly advantageous. There is, at this day, a pretty general agreement amongst medical men, that mercury is the most generally useful medicine in this disease, when judiciously employed. Chomel has noticed the utility of producing ptyalism. Elliotson has a high opinion of its efficacy, and gives most judicious directions for administration. Armstrong has placed his principal reliance upon it in what he very properly calls the inflammatory and congestive typhus; and Copeland observes, that when salivation takes place, the fever ceases. The introduction of mercury in the treatment of the common contagious fever of this country, is one of the greatest improvements in modern practice. There are still some to be found who withhold their assent from its employment to any considerable extent, from being more or less in the trammels of the doctrine of debility, and of the theories of Cullen and of Browne; but the period cannot be very remote when every well-informed man in the Profession, guided by the light thrown upon the disease by modern pathology, will seek to combat the most formidable symptoms by the skilful administration of that powerful remedy, particularly inflammation occurring in any organ or tissue, or conges-

tion in either the brain or the lungs. Upon the whole, this small volume is a work of great merit, exhibiting great research, industry, and observation; and contains a great deal of sound doctrine, and useful practical knowledge in a small compass: it is well worthy of the attention of the Profession, and is sure to afford great satisfaction upon a careful perusal.

A Practical Treatise on the Diseases peculiar to Women. By Sam. Ashwell, M.D., &c., &c. London, 8vo. Part I.

Dr. Ashwell proposes to publish a comprehensive treatise on the functional and organic diseases of the female genital system, and on those of pregnancy and childbed. Of the three portions into which the subject is divided, the first is before us; and we can truly say, that it is creditable both to the author and publisher.

Situated, as is Dr. Ashwell, in extensive practice, and at the head of the obstetric department of a large hospital, it could not be, but that his work must contain very valuable information—the results of great experience; and in expecting this the reader will not be disappointed. We cannot always agree with his definitions or his classification; but these points are of secondary importance to the practical information contained in the work.

An analysisof the entire work would exceed the space allotted to this notice; we must, therefore, content ourselves with a selection. Passing over the chapters on Chlorosis and Amenorrhœa, which will, nevertheless, repay perusal, we select that on Dysmenorrhœa, as being one of the best in the work, and not too long. Dr. Ashwell gives the following definition:

"Menstruation, preceded and accompanied by acute and often lancinating pain in the uterus and adjacent parts, and occasionally in the mammæ, with derangement of the secretive function; the catamenia being usually, though not invariably, scanty in quantity, and in the severer and more chronic cases, clotted, shreddy, and membranous."—p. 100.

The author divides dysmenorrhœa into four varieties—the irritable or neuralgic; the plethoric; the congestive; and the mechanical.

"The earliest symptoms of irritable or neuralgic dismenorrhœa, where there is neither inflammation nor congestion, are referrible to

general disorder of the health, such as impaired appetite, great langour, gradual loss of flesh, and uncertain action of the bowels. The catamenia become irregular, sometimes appearing in excess, with a prolonged interval; while, at other times, suppression is an early morbid indication. The discharge is emitted with almost indescribable pain, being shreddy, clotted, and generally scanty in quantity. These symptoms vary much in different cases. In some individuals they are but temporary, continuing only for the first day or two of the period; when after the expulsion of a small clot, not always firmly coagulated, the discharge assumes its natural consistence, and is unaccompanied by more than the usual local uneasiness. In others, the whole time is one of intense suffering, commencing with sharp, darting, lancinating pain in the uterus and vagina, and extending, apparently, to the uterine appendages. There is acute sympathetic pain in one or both breasts; the lumbar pain, running down the sacrum to the thighs and groins, becomes excessive; and during the emission of the discharge, the expulsatory pains, resembling the throes of labour, add much to the suffering. When the menstrual period has ceased, the suffering is for the time at an end, and the strength is less reduced than might have been expected. During the whole period little febrile excitement exists, and the amount of constitutional injury from one or even several of these attacks is inconsiderable.

"By-and-by, however, if proper treatment be neglected, or if the disease is so inveterate as not to yield to it, the general health becomes much impaired, and the reciprocal morbid action of the one upon the other greatly aggravates the case. Without any sympathies of the uterus, with the exception of the mammary, being called into prominent exercise, the bowels become uncertain in their action, being sometimes constipated, and then unduly relaxed, even from a mild purgative: the hepatic secretions are variable in quantity; and occasionally there is pain and excoriation about the anus from their acrimonious nature. The appetite is capricious and small, food is almost loathed, the blood becomes impaired, and imperfect nutrition is evident from paleness of the general surface, emaciation, and loss of physical power. In this stage of the disease, leucorrhœa becomes profuse, if it has not habitually existed; and sometimes amenorrhœa supervenes, thus entirely suspending the uterine suffering."—p. 101.

We have quoted this description of the symptoms in neuralgic dysmenorrhœa at length, because it is a very good one, and answers to a large class of cases seen daily in practice. We cannot speak quite so highly of the author's notice of plethoric dysmenorrhœa; nor has our experience led us to the conclusion, that the latter resembles the former. The precursory symptoms which Dr. Ashwell describes, we have generally found very prominent, and giving the case an aspect widely differing from the former one.

The congestive variety, Dr. A. seems to attribute very much to the remedies given for imperfect menstruation. The most remarkable phenomenon is, "the intense uterine pain, with a sensation as though some foreign body was shut up in the uterine cavity, and in the attempts at its expulsion the uterus is aided by the voluntary as well as involuntary efforts." False membranes may be expelled in this as in the other varieties; and it is remarkable that in this species there are no inflammatory symptoms.

The late Dr. Macintosh of Edinburgh has the merit of having pointed attention to a cause, or what he deemed to be such, of dysmenorrhœa, viz., a stricture in the canal through the cervix uteri. That such a state of the parts exists cannot now be questioned, but that it gives rise to dysmenorrhœa is by no means established. In some cases on record, the cure of the stricture has not been followed by relief of the disease. Dr. Ashwell mentions one case in which he entirely failed, and another in which he was more successful: and he is disposed to attach more value than others to Dr. Macintosh's views.

The section on the diagnosis, pathology, and prognosis of disease, is very good, but we have not space to quote it. As to the treatment, Dr. Ashwell truly observes, that the different varieties require different, and nearly opposite, management; "for while inflammatory and congestive dysmenorrhœa require depletive and antiphlogistic measures, the neuralgic or irritable form calls only for narcotic and slightly nauseating remedies."

The treatment during a paroxysm is also necessarily different from that during an interval. Under the former circumstances,

"In the more ordinary variety of the malady, the *neuralgic*, the mustard hip-bath and some narcotics are especially beneficial; if the attack be aggravated or of frequent recurrence, then ipecacuanha or antimony ought to be employed." "When the pain is very severe the bath may be continued until faintness is induced, and if it be inadequate for this purpose, then half a grain of ipecacuanha, or fifteen or twenty drops of antimonial wine, may be exhibited every hour." "In the milder case, a hot hip-bath and slight narcotics will suffice. Camphor, ipecacuanha, and hyosciamus or Dover's powder; the extract of hop, lettuce, conium, and belladonna, variously combined, relieve the pain, and induce perspiration and sleep."—p. 109.

Other opiates, such as Battey's solution, or morphia, may also be used.

"In the inflammatory and congestive forms of dysmenorrhœa, in addition to the remedies already enjoined, local depletion is peremptorily required; and there are cases, where there is vascular

fulness, in which a small general bleeding will be advantageous." "Leeches to the os uteri have already been mentioned; and I think, when well applied, they are decidedly more beneficial than any other local depletion." "Hot poppy fomentations to the abdomen generally, and particularly to the hypogastric region; injections, several times during the twenty-four hours, of poppy and conium into the vagina, so as constantly to bathe the lower part of the uterus, will encourage the discharge, and soothe the pain."—p. 110.

As to the treatment between periods, Dr. Ashwell recommends chalybeates, mild aperients, occasional alteratives, and attention to the disordered state of the digestive organs, in the neuralgic form of the disease, and in the inflammatory, local depletion, saline purgatives, spare diet, occasional hip-baths, or fomentations, and tonics.

In this short notice of a very valuable work, we have as much as possible allowed Dr. Ashwell to speak for himself, and still we feel that our limits scarcely permit us to do the author justice. The work is full of important information, and excellent practical description; and without professing originality, Dr. Ashwell has evidently given us the result of his own extensive observation. We look forward with pleasure to the appearance of the next part, and we trust the favourable reception of the present number will hasten its publication.

A Memoir on Extra-Uterine Gestation. By Dr. W. Campbell.

Dr. Campbell has earned for himself a high reputation as an author; and any thing from his pen is sure to meet with attention from the Profession. Having given us a systematic treatise on midwifery in general, he has thought proper to work out more elaborately one of those deviations from the regular course of reproduction, the existence of which involves some interesting problems in physiology, as well as serious difficulties to the accoucheur, and great danger to the patient.

The author commences by explaining what he means by the term *extra-uterine.*

"When nature is interrupted in her operations, and the product of impregnation does not enter the organ destined for its reception, the ovum, as may be learned from abundant evidence contained in the following pages, may attain a certain degree of development, or the embryo may even be brought to maturity, either in one of the uterine appendages, or in connexion with them in

the abdominal cavity, and the pregnancy is then said to be *extra-uterine*, to which term an adjective is prefixed, to designate the organic relation or particular locality of the product."—p. 1.

A few pages are devoted to the literary history of the subject among the ancient authorities, and then we arrive at the consideration of "the effects of impregnation in the organs of reproduction, and on the evolution and transit of the ovulum towards the uterus," preliminary to the chapter on the varieties of extra-uterine gestation, which contains the principal divisions of modern authors, concluding with Dr. Campbell's own.

"The following division," says the Doctor, "may be considered as unobjectionable as any that have been offered, viz., ovarian, ovario-tubal, tubal, and tubo-uterine. These terms are however merely relative, and intended, not to imply that fecundation is performed in a different organ, or happens differently in those cases, to what takes place in natural gestations, but to particularize the different situations in which the product of conception may be arrested in its progress, in advancement towards the uterus. Or, in other words, we are simply to understand by these terms, that fecundation has taken place, as in ordinary cases; and that some cause has led to the detention of the product of conception within the ovarium, or in connexion with this organ; *secondly*, that while in the foregoing position, and the fimbriæ of the tube have been extended upon the surface of the ovary, the ovum has formed a connexion with the tube, and thus a foundation has been laid for the ovario-tubal variety; *thirdly*, that the ovulum has entered this tube, but has been arrested at some point between its fimbriated and uterine extremities, and constitutes the tubal variety; and *fourthly*, that from the tube, in occasional instances, having been apparently but a mere prolongation of the uterine cavity, and in common with the uterus, contained the ovum, the tubo-uterine variety has been formed."—p. 22.

Numerous cases of each kind are given, but for them we refer the reader to the book itself, contenting ourselves with a short extract on the symptoms:

"In many instances," says Dr. Campbell, "of the different varieties of misplaced gestation, the catamenia are suspended; frequently, however, they appear regularly in each of the early months: in some cases, they flow at uncertain periods; and in other examples, they are either profuse, or limited in quantity. In many cases, at an uncertain period of gestation, we have hemorrhagic uterine effusions, the extrusion of coagula, of bodies which resemble moles, or portions of the placenta. These appearances have occasionally led to the belief that the patient had actually aborted, or that the ovum was originally not extra, but intra-uterine, and had escaped through a rent in the uterus, into the peritoneal ca-

vity, the extruded body in either case being viewed as the placenta." "The mammæ enlarge, and the areola is progressively developed, as in ordinary cases; the patient may or may not suffer from morning sickness; and fœtal movement is felt at the usual period. In studying the symptoms, those referred to the abdomen demand careful investigation. We have particularly to consider, more especially in the early months, whether the tension or tumefaction, if there be either, be confined more to one side of the abdomen than the other; and whether any uneasiness, of which the patient may complain, and fœtal movement, be limited to the same side of the cavity. Nor must we overlook, in this part of the inquiry, that in a large majority of the cases under consideration, the various ailments of the patient have been more aggravated than in natural gestations, as may be remarked by consulting the foregoing histories. These complaints may be either functional or structural. Among the former, vomiting, diarrhœa, constipation, and harassing tenesmus, with dysuria, or some degree of obstruction to the flow of urine, may be particularized, arising either from the mechanical influence of the cyst and its contents, or from the effects of morbid alterations in the ambient organs. The second order are very harassing to the patient, and often recur under the form of excruciating pains, with umbilicus, resembling severe colic, near the pubis, or in either iliac or lumbar regions; a sense of weight and uneasiness deeply seated in the pelvis, thence sometimes extending to the kidneys, whence it becomes more or less acute, as particularized by M. Chaussier."—p. 105.

This outline is carefully and laboriously filled up as regards each variety of misplaced gestation, the symptoms in each being distinguished so far as it is possible. Then follows the diagnosis, prognosis, termination, pathology, and treatment.

We regret that our limits forbid our entering into more detail; but we can assure our readers that a perusal will amply repay them. The learning is very great, and the author has spared no pains to make his the standard authority upon the subject.

Elements of the Practice of Medicine. By Charles Lendrick, M. D., T.C.D., Queen's Professor of the Practice of Medicine. Part II. Dublin: Hodges and Smith.

This work of the learned and excellent Professor of the Practice of Medicine in the School of Physic, is one which has peculiar claims to the notice of the student and the practitioner. The smallness of its compass might lead such as are unacquainted with the character of the author, to the idea that it

was one of the numerous abridgments or compilations with which the press has lately teemed, so characterless, so worse than useless. But a brief examination would show that this is a book of real value, as expressing the opinions of an experienced, right-thinking, and highly educated physician; the object of which, to use his own words, is, "to compare and connect," to follow the course of nature, and to detail practice, as *pursued at the bedside.*

The great characteristic of this work is, that it is totally free from prejudice or egotism. It is a calm exposition of those principles of medicine which experience has shewn to be true, given in a dignified and condensed style; and without attempting to conceal the difficulties or obscurities of medicine, it points out the general views of disease which are really important, as bearing on practice.

In illustration of these observations, we shall insert the following extract, as shewing the author's style and mode of dealing with his subject. Dr. Lendrick is speaking of cutaneous diseases.

"The following rules are to be observed in the treatment of cutaneous dieases.

"First. To determine whether the disease is connected with, or independent of a specific constitutional affection, such as syphilis, scrofula, &c., or any morbid state of the digestive or other functions, the treatment of which might supersede, or prove accessary to that of the cutaneous malady. The management of the case is to be conducted accordingly.

"Secondly. To ascertain, whether, from the connexion or alteration of the cutaneous disease with any constitutional or visceral affection, there is reason to suppose that the removal of the morbid state of the skin might be followed by serious consequences. In such cases, the treatment must be conducted slowly, and principally by constitutional means, or altogether withheld; according to the trivial, or dangerous character of the threatened affection. In most instances, however, it is expedient to open an issue in the arm, on the healing of the external disease, especially if the patient be advanced in years, or the cutaneous disease of long standing.

"Thirdly. To conduct the treatment of the cutaneous affection during the state of irritation, on the principle of diminishing this state, as far as practicable, by antiphlogistic and sedative remedies, applied both constitutionally and locally. As the indolent state becomes established or increased, stimulating remedies are to be used, so that, as morbid irritation subsides, artificial irritation shall be augmented.

"The antiphlogistic or sedative remedies, applicable in cutaneous diseases, vary accordingly to the degree of fever or local irritation. They include (commencing with the more active) constitutionally—venesection; gentle emetics; hyoscyamus or opium, in case of great

restlessness; purgatives; a diet altogether or nearly confined to preparations of milk and vegetables, including lemonade, spruce beer, and vegetable acid drink; antimonial medicines; sarsaparilla; the *fresh*-water or vapour bath—topically—bleeding by leeches; fomentations of poppies or anodyne herbs; honey; cotton wadding (to painful clefts) or gold beater's skin; clotted cream; and lotions containing the preparations of lead. The hair, of the scalp, pubis, &c., is to be carefully and gently removed by cutting, poulticing, and shaving.

"Stimulating remedies, arranged inversely as their irritating effects, consists of, constitutionally—a diet of meat with fermented liquors, progressively increased with respect to the capability of affording nutriment, and piquancy; tonics, bark, and mineral acids; sulphureous mineral waters; chalybeates; mercury, exhibited in alterative doses, or so as to affect the constitution; iodine; and arsenic—locally—sulphur baths, aqueous or in vapour; salt or mineral water baths; lotions of vegetable or mineral acid, or of acidulous salts; lotions of sulphur, alkali, tar, mercury, or iodine; and (in the case of inveterate spots) caustic or blisters, with the eradication of diseased hair by means of strips of linen spread with a paste of pitch and flour, or other adhesive composition.

In treating cutaneous diseases, especially with stimulants, the remedies must often be used empirically, or at least experimentally, those that most frequently succeed occasionally failing, and *vice versâ*. The indiscriminate use of sedatives and stimulants, without due adaptation to the stage or symptoms of the case, and the neglect of ascertaining the connexions of the disease independent of its mere cutaneous character, often lead to unsuccessful results.

The next extract we shall make is Dr. Lendrick's graphic account of gout and its treatment. It contains every thing connected with the subject which is of practical value.

"Gout.—This, like rheumatism, is a specific inflammation of the fibrous tissue, but displaying its effects more in the cutaneous and mucous, than in the serous or cellular structure. There is always, however, some tumefaction, and occasionally considerable œdema. The skin is inflamed and the veins are turgid.

"Among the distinctive marks of gout, as compared with rheumatism, may be mentioned the hereditary character of the former. Gout may also be 'acquired' by luxurious habits and high living. The greater the hereditary predisposition, the less is the amount of acquired tendency requisite to produce the disease, and *vice versâ*.

"Rheumatism, in the acute form, is a disease of variable and uncertain occurrence. Some patients have only one or two severe attacks during life. Gout, on the contrary, has a tendency to recur, and often periodically. In decidedly gouty subjects, a long interval generally presages a severe paroxysm.

"Gouty patients sometimes enjoy perfect health in the interval of the paroxysms; more frequently, however, there is a state of indisposition. This, if long previous to an attack of the acute disease,

or superseding it, is termed 'chronic gout;' if immediately antecedent to the paroxysm, it is considered as merely constituting the 'premonitory symptoms.'

"The premonitory symptoms are generally described as those of indigestion, with flatulence and acidity of stomach. The fact is, however, that there is scarcely a function, especially of the mucous membranes and nervous system, which is not occasionally involved at this time. Various strange sensations affect the head; the respiratory system is involved, and cough, with expectoration, ensues; almost every imaginable variety of deranged state of the digestive organs displays itself; the heart palpitates, or displays irregular actions; the urinary system participates, the urine is unsually acid, deposits a pink-coloured sediment, and the organs are affected by irritation; the cutaneous system sustains alternations of temperature, with itching; the limbs suffer from sensation of cold, termed 'aura podagrica,' prickling, numbness, and a feeling of weight; the muscles undergo cramps and twitchings; in short, the semblance of almost every disease to which humanity is liable, may be assumed at this time, especially if there be, independently of gout, any *tendency* to such a disease in the constitution. This simulation of, and on the other hand, this tendency to disease, are to be kept in mind by the medical attendant; the first as diminishing, and the second as confirming apprehensions of the result. An apparently organic disease may be only a gouty sympathy, but still an obstinate sympathy indicates, or is premonitory of the reality of visceral disease.

"The paroxysm of gout sometimes takes place without premonitory symptoms, and either gradually, or suddenly. It may recur once or oftener every year, or with an interval of years, and continue for days or months. The inflammation may attack one, or several joints, either successively, simultaneously, or with recurrence. The foot, however, and its great toe, which seems to be the peculiar site of the gout, very seldom escapes, and here redness of colour is generally more remarkable than elsewhere. The sensations of pain felt and described by the patient, are both superficial, and deep-seated; the former are compared to scalding, burning, cutting, or tearing; and the latter to boring, grinding, crushing, or dislocation of the bones. The suffering is greatest at night. The paroxysm subsides after, ordinarily, at least one repetition of such attacks. There is, in general, desquamation of the cuticle of the part affected, and the consequent infirmity often lasts a considerable time, or is permanent.

"By 'misplaced or retrocedent gout' is understood, not merely the sympathetic irritation already alluded to, but an actual attack of the disease in other situations than those ordinarily occupied. Instead of affecting the extremities, gout is sometimes transferred to the brain; the symptoms are those of apoplexy or phrenitis, and the case, if the disease remain there, not less dangerous. Syncope, and violent pain in the region of the heart, announce its attack here. Vomiting, sinking of the strength, and overwhelming pain at the epigastrium, denote one of the most frequent translations of gout, that to the stomach. The super-addition of severe griping to pro-

fuse diarrhœa, resembling cholera, indicates that the mucous membrane of the intestines is involved. Where the kidney or bladder is affected, there is violent pain in these regions, with tenesmus, and suppression of the urine. The distinction of retrocedent, from misplaced gout, has reference merely to the immediate precedence of an apparently imperfect *paroxysm* of the articular disease.

"Gout being a *disease*, the prevention of its disposition to establish itself in the constitution ought always to be attempted; as also the diminution, as far as practicable, of that disposition if already formed. This is a different matter from the prevention or abrupt extinction of local articular inflammation, which frequently acts a safety valve, a measure often leading to the formation of misplaced gout.

"In attempting to alter the state of the constitution, during the interval of paroxysms, or where gout has been threatened, the rules of conduct are founded on the same principles as the management of the paroxysm itself. The younger, and otherwise more healthy the patient, and the less habituated to the disease, the more safely and effectually may an attempt be made by vegetable diet, abstinence from spirituous or fermented liquors, and laborious exercise, so to change the constitution, that articular inflammation shall not be requisite as a vent for its redundancies. In proportion as the disease is established, and the constitution weakened, the reduction of its powers by a too sparing regimen is either likely to have little influence on the sufferings produced by gout; or, to change it from the usual articular to the misplaced variety, and to that chronic state of anomalous indispositions already alluded to, in which a regular paroxysm is rather a welcome than a dreaded visitor.

"The avoidance of luxurious living, temperance, and abstinence from animal food and fermented liquors, in proportion to the circumstances just referred to, and as far as (perhaps farther than) suits the patient's feelings of comfort; with such exercise as may produce neither general exhaustion nor muscular weakness, are to be reckoned among the best prophylactic measures.

"The treatment of the paroxysm of gout has been a matter of much controversy; both the active and passive systems having their advocates. Much depends on a due distinction of cases. If gout attacks the young or otherwise healthy patient, and is attended by inflammatory fever, there can be no doubt as to the expediency of antiphlogistic treatment—as in acute rheumatism. Bleeding, general or local, is inappropriate, the disease being still more metastatic than rheumatism, and presenting fewer of the characters of ordinary inflammation; bleeding should therefore be reserved for the cases in which it attacks or threatens internal organs. Colchicum may be administered with as good effect as in acute rheumatism, provided the pain is *violent;* and rest should be procured by opiates, unless there is obvious determination of blood to the head. As compared with other diseases, and under similar circumstances, gout admits of a more free use of purgatives, on account of the frequency of its connexion with derangements of the biliary system. The bowels may be freely

moved with advantage, even in persons of an exhausted habit: mercurial and aromatic medicines are usually preferred.

"Where the patient is of this habit, a martyr to the disease, or advanced in years, and the attack nearly independent of fever; the antiphlogistic system is to be less rigorously enforced, and that, in proportion to the degree that these modifying circumstances are in operation. Thus it may be requisite to adopt the usual low fever dietary, merely allowing in relaxation, a little weak chicken broth: or further, in a patient in advanced years, or suffering under habitual non-febrile gout, to allow a generous diet, and make merely a diminution of his ordinary allowance of animal food and wine.

"Many local applications have been recommended in gout. With the exception of a covering, warm in a degree agreeable to the patient's feelings, and less so than the flannels generally used, it may be justly said of all—that the risk of transferring the disease to important parts, is much out of proportion to any relief to be expected from having recourse to such remedies, whether leeches, cold lotions, fomentations, or stimulants.

"Gouty affection of the brain scarcely differs, as to its treatment, from apoplexy, or phrenitis, nor does so urgent a case admit of nice distinctions. Gout in the stomach is to be treeted by large draughts of water as hot as the patient can bear, followed by a stimulating and opiate mixture, with warm spiced brandy and water: but the excessive quantities of opium and brandy, formerly used, are rarely requisite or proper: sinapisms should be applied to the epigastrium. In case of the disease attacking the bowels, or kidneys, a large enema of warm water, followed by a smaller one containing half a drachm of laudanum, should be administered, and aided by the warm bath, and leeches applied to the seat of pain. In all these cases, sinapisms, or fomentations of decoction of mustard or horseradish, should be applied to the feet, in the hope of causing a derivation of the disease to its ordinary site there.

"There is much difference of opinion as to the use of bloodletting in misplaced gout. As the general rule, it ought to be resorted to in all cases bearing marks of acute organic inflammation; but it is to be practised to a less extent, than if the inflammation were of the common form, as observed in constitutions not gouty."

We shall look forward anxiously for the appearance of the third part of this excellent work; and if, as there can be little doubt, it will be equal to those which have preceded it; we shall then owe to Dr. Lendrick a work which there can be no question will add to the reputation of Dublin, as a practical and eclectic school of medicine.

SCIENTIFIC INTELLIGENCE.

Dr. Aldridge, on the Structure and Functions of the Pollen.—We extract the following original and important observations, on this very obscure but interesting subject, from a letter by Doctor Aldridge, addressed to Sir W. J. Hooker, Bart., and published in the September Number of the Journal of Botany:—

"You are of course aware, that acids possess the property of causing the grains of pollen to dehisce. This discovery, mentioned with regard to the sulphuric acid, in Lindley's last edition of his "*Introduction,*" I had previously found to occur with dilute nitric acid, and I have since extended the observation to most of the acids, as well organic as inorganic.

"The knowledge of this fact would appear naturally to lead to the chemical examination of the stigma, and accordingly I have found the stigma to be acid at some period. This curious fact is easily demonstrated by pressing any stigma, especcially a large fleshy one, such as that of the *Turk's cap Lily*, or a *Grevillea,* between a fold of litmus paper. Your extensive acquaintance with species will suggest an infinite number of corroborative phenomena; thus, in *Myosotis*, some species of *Symphytum*, *Borago*, *Anchusa*, *Polemonium*, &c., you may recollect the flowers being red before impregnation, and changing to blue afterwards; while in some species of *Iris,* the converse of this is found, for the petaloid stigmas, which are blue previous to the bursting of the anthers, immediately afterwards become purple. In these cases, the natural colouring matter supplies an appropriate test for the existence of acid.

"I need but call to your recollection the differences which have existed between the observations of Brongniart and Treviranus, as respects the mode of dehiscence of the pollen; the first perceiving the protrusion of a gut or tube, which he imagined to descend through the intercellular passages of the stigma; while the latter was never able to detect this organ. Lindley reconciles this contradiction by the difference of the circumstances under which dehiscence may take place; in water no gut being protruded, but the fovilla scattering itself irregularly through the liquid, while on the stigma, the tube is formed in consequence of what he conceives to be a vital action.

"I find that under the influence of acids, the contents of the pollen are protruded in *many instances* in a form closely resembling a gut or tube, but that in pure water, when rupture takes place, the fovilla diffuses itself through the fluid without any order.

"My next observation explains how this happens; for I find in the transparent pollen of *Monocotyledones*, as well as of the *Rosaceæ*, *Leguminosæ*, &c., the addition of acid renders them instantly opaque; and I am thus led to conclude that the fluid in which the fovilla floats, is coagulated by these reagents. Now, when the external membrane of the pollen dehisces by pores, it is easy to understand why the coagulated contents, forced through these small round apertures, should assume a tubular or gut-like appearance. In the *Liliaceæ*, *Smilaceæ*, *Butomeæ*, and several allied families, the dehiscence is by a suture; and in those cases, upon the addition of acid, the external membrane peels off, leaving the contents of the original form: while I have sometimes found species, such as *Butomus umbellatus*, and *Iris fætidissima*, which have naturally opaque pollen, burst in water in a manner similar to their allies under the influence of acid, and I have always found these varieties capable of reddening litmus.

"An appearance which might seem to support Brongniart's hypothesis, is frequently seen in *Gentianeæ*, *Tropeoleæ*, *Lineæ*, *Plumbagineæ*, *Polemoniaceæ*, *Labiatæ*, and some other families. The pollen of these plants when placed in water or acid, may be observed to form on their surfaces little vesicles, which are at first transparent, but become in acid soon opaque. These vesicles are evidently formed by the protrusion of an inner membrane of the pollen, through pores in an outer one; but when they burst, the usual results take place; if in water, the fovilla becomes scattered, if in acid, it is bounded by a definite gelatine.

"Many observers have remarked the alterations which the form of the pollen frequently undergoes when placed in water. I find that the addition of acid often produces a fresh metamorphose.—Thus, in the *Leguminosæ*, *Rosaceæ*, *Crassulaceæ*, *Saxifrageæ*, *Hippocastaneæ*, *Rutaceæ*, and those genera of *Ranunculaceæ* which have follicular fruits, the pollen when dry is oval, and marked with a dark central line, but when placed in water, the central line disappears, and the figure rapidly becomes spheroid; again, when acid is added previous to protruding its contents, it usually assumes a triangular appearance. Now, it is very curious to find in *Grevillea*, the pollen naturally to possess a triangular form, exactly similar to what acids produce in the former instances. At the same time, this is beautifully explained in the structure of the flower in this genus; for the green stigma is very acid, and when the flower is young is pressed strongly against the authors. The pollen being thus developed ander acid influence, possesses normally the same form, as is produced in other cases artificially.

"The triangular pollen of *Onagrariæ* and *Circeæ*, is not to be

confounded with that of *Grevillea*, being produced by a very different cause. In the families cited, the triangular form of the pollen is produced by the cohesion of three spindle-shaped granules, which can be very distinctly seen in *Epilobium hirsutum*.—In this species, each granule which enters into this compound pollen, is capable under the influence of acid, of dehiscing by a pore at each extremity, so that the pollen bursts by six pores. In *Fuchsia*, *Œnothera*, and *Circæa*, the neighbouring pores coalesce, so that in these cases the pollen bursts by three pores only.

"A phenomenon, similar to that of *Grevillea*, is presented in *Fumaria*; in this instance the diadelphous stamens have their anthers collected between the extremity of the stigma and the connate and highly acid summits of the inner petals. Under these circumstances, the natural form of the pollen in *Fumaria* is the same as may be produced through the agency of acids in *Corydalis* and *Dielytra*.

"The above are the most general and best proved of my observations, which may be shortly stated thus: namely, that the stigma is always acid; that it is in consequence of this acidity that the pollen bursts; that by the same means the fluid contents become coagulated, enveloping the fovilla, and assuming, according to the method of dehiscence, different and very remarkable forms.

"I am aware that these observations render still more obscure the operations of the pollen on the ovule. It is difficult to conceive how the fovilla entangled in a coagulated mass, can reach the ovule. But we must be contented to take truth as we find it. It is the object of the natural historian to observe, rather than explain."

M. Louvrier's Operation for the Cure of Anchylosis.—The patient, æt. 32, dwelling at No. 163, Rue S'Honore, had come from Angers, in order to be operated upon. The anchylosis was of three years' standing, and was caused by a fall from a horse. The patient was strong and healthy in other respects. When standing upright, he supports himself upou the point of the foot, and the leg is bent at an obtuse angle towards the thigh; the knee much enlarged, and covered with a tense and shining skin; it was difficult to determine whether this tumefaction was caused by swelling of the soft parts, or by hypertrophy of the bones forming the joint. Tumefaction greatest on the internal side. It is impossible to extend or bend the joint, consequently progression is effected alone by means of the hip joint; motion in walking gave much pain in the internal side of the joint, and caused fatigue, particularly when he walked on uneven ground, or struck the foot against anything. In other respects, the patient was cheerful, although despairing of ever being set free from his infirmity, which was rendering his life burdensome. Louis, Berard, the younger Jobert, many other surgeons, and the writer of this paper being present, M. Louvrier proceeded as follows. He commenced by fixing

tightly a linen bandage around the knee, in order to prevent spasmodic twitchings of the muscles; this bandage covered the inferior part of the thigh and the superior part of the leg; all the hollows in the latter were stuffed with wadding, secured by a second bandage, which gave the limb the form of a cone, the base of which was at the knee; the supposed use of this was to protect the soft parts underneath from pressure. The anterior and posterior surfaces of both thigh and leg were secured with straps of strong leather, with buckles, which were also useful in protecting the soft parts from the pressure of the different pieces of the apparatus; a woollen stocking was then drawn on, and over it a shoe of strong leather, which was secured to the apparatus on the leg with straps and buckles; a strong screw, with a hole perforated through its head, was fixed into the under surface of the heel.

When these preparations had been made, the patient was placed on a table, sitting upon a pillow, with his back supported by a wall, the legs on the table, the left one placed in the apparatus. This latter consists of a box in form of an elongated parallelogram, with sides united to it at a right angle, the under piece of which is plane. A cylinder with cogs is attached to the lower part of the box next the boot, round which a strong cord of the thickness of a writing quill, is secured, and its other end fastened to the eye of the heel screw, as a means of extension; the cylinder is worked by a little handle like that of an organ. A piece of strong leather is then extended from the middle of the thigh to the middle of the leg, embracing only the two posterior thirds of its circumference, and with its edges fixed over the anterior part; a circular piece immediately over the joint is deficient, in order to permit of the motion being effected: This band is furnished with four iron uprights, which stand at the four angles of the knee, carrying a cushioned horizontal metal plate which is made to exercise pressure direct upon the knee. In order to accomplish this, a cord is fastened to the metal plate, passed directly backwards, then round a pulley, and along in a horizontal direction, till it is passed round the little windlass mentioned above.

When the limb has been thus arranged, there remains a triangular space, the vertex, at the joint, the sides formed by the thigh and leg, and the base by the plane surface of the under splint. The object is to destroy this space, or, in other words, to effect that the knee should be brought in contact with the lower splint. In order to obtain this result, it was only necessary for M. Louvrier to turn the handle. Both the cords were coiled on the rollar; the one drawing or extending the foot, the other pressing on the knee. The patient uttered a weak cry, and in less than fifteen seconds the limb was made perfectly straight; the pain was violent, but of short duration. I have described the apparatus of Louvrier as well as I could do without the aid of a drawing, but to perfectly understand the individual parts it would be necessary to see the apparatus itself, or an accurate drawing.

This method of treating anchylosis is, doubtless, one of the

boldest experiments in surgery which has been attempted for some time.

It is fearful to think of the destruction which such an operation produces; tearing asunder of the cartilages, rupture of tendons and ligaments, violent extension of the popliteal artery and vein, with the inflammation which it is natural to expect would follow from all these causes; but fortunately none of these necessarily occurs; and it is hardly necessary to make some emollient applications, for in a few days the patient finds himself in a condition to walk.

This proceeding, so advantageously spoken of, demands inquiry; and it would be well if hospital surgeons, having bodies at their command, where anchylosis was present before death, should apply this graduated violence to them, and accurately see what degree of injury was done to the limb in an anatomical point of view, before submitting living beings to this painful process.

I visited the patient 48 hours after the operation. He was in a good state, and had neither fever nor pain in the limb, which was kept extended by an apparatus which exercised slight pressure on the knee. Bandages had been placed on the knee and neighbouring parts, and kept moist with laudanum. He had good appetite, and had slept well, and had walked a little in the chamber yesterday.

Acute Glanders in Man.—Last year we communicated many cases of glanders occurring in the human subject. We give the following from the Archives Générales de Medicine, because it differs, in some respects, from any of the former; communicated by M. Marchant, Interne in the Maison de Charenton.

Dominique Auguste Perin, student in the Veterinary School at Charenton, since 1834, had often been affected by syphilis; and, in 1838, had chancres and buboes which were cured after three months treatment. Five months after Perin was directed to inspect a horse affected with acute glanders, and to note down all the particulars, and make a post mortem examination. Having done so he became stupid and melancholy, his face pallid, appetite failed, and he had rigors.

The 28th August he underwent his practical examination, and the horse on which he had to perform his operations, had been affected with glanders. Perin was then seized with intermittent fever which yielded to the administration of quinine. The 13th September he came to Paris, and went very much about; and on his return to the school, he went to bed, and complained much of pains in the muscles of his arms, neck, and back. On the 14th, he was lying in bed during the morning visit. There was a thick sero-purulent discharge out of the right nostril. The day previous, a slight eruption accompanied by an erysipelatous redness was remarked upon his right cheek. The left cheek was as usual. His pains were much more intense; he blew his nose often, and remarked frequently the matter which flowed from his nose, to which he was continually applying his finger, and which seemed to cause him the greatest anx-

iety. His powers of mind were undisturbed, and he answered all questions properly. The nights of the 15th and 16th he was very restless and delirious, copious perspirations occurred. His respiration was hurried and noisy, felt great pain on the slightest motion, and he died on the morning of the 16th, at half-past 8.

The autopsy exhibited a small quantity of dark blood; mucosity in the left nasal cavity, which, as it dried, formed small crusts on the face. The pituitary membrane had a reddish violet appearance; on the right side there was a row of small ulcerations, standing close together, surrounded by a circle of injected vessels; these occupied the space between the septum narium, and the inferior spongy bone, and were continuous along the floor of the right nasal fossa; on the external side they were still more numerous, and each of them seemed to be the external opening to a little abscess placed between the muscles of the alæ nasi and the mucous membrane; for when they were pressed with the fingers a few drops of purulent matter exuded from each. The mucous membrane of the left nasal cavity was a little thickened, as well as that of the mouth and lary nx, nd both were of a violet red colour. The right maxillary sinus was filled with a yellowish mucus.

On opening the cranium, the arachnoid was found thickened, and in its folds a coagulated extravasation, whilst in the ventricles of the brain there was a considerable quantity of bloody serum.

M. Marchand makes the following remarks upon this case:

1st. That the patient had come into contact with a horse affected with glanders; that he had lived under the most favourable circumstances for feeding the disease, for that whilst yet struggling with the first infection, he had opened a glandered horse, which in the school at Alfort always occupies many hours, during which period the operator is apt to touch his eyes or nose with the infectious matter.

2nd. The suddenness of the death must be ascribed to the extravasation of blood on the surface of the brain, as all the other lesions were consistent with life.

3rd. The ulcerations in the nasal cavity were identical with those which veterinary surgeons denominate "chancres;" and the discharge from the nose was similar to that from glandered horses.

4th. Had not the extravasation of blood in the brain caused death all the symptoms of glanders would have developed themselves in their usual course.

5th. There were abscesses in the lungs exactly similar to those found in glandered horses.

6th. The spleen exhibited the same changes also as occur in the horse.

Colouring Matter of Sea Salt.—Professor Ehrenberg communicated to the Natural History Society at Berlin, his observations on the reddish colour observable in sea salt, as also in rock salt; and expressed his opinion, that the colour was owing to the remains of animalcula in a dried state, in a state of chemical transition, from the agency of the salt. They belong to the class Ophidomas, Ophidomas Sanguinea.—*Froriep's Neue Notizen, Dec.* 1839.

Varicoblepharon, by Dr. Heidenrich.—A servant-maid, æt. 22, and plump, had a mole the size of a pea on the upper eyelid, (it is probable it was congenital,) which she had remarked for ten years; it became blue when exposed to cold, and for some few years back had much enlarged. Six years ago, after a violent blow, it had become smaller, a great deal of blood being lost; but for the three last years it had again increased. The eyelid was knotty, soft, swollen, two-thirds bluish red, and communicated to the touch the sensation of a bag of worms, could be made to disappear gradually under pressure, but soon reassumed its former appearance. This tumour caused the eye to be nearly half-closed, and it was only on the inner side that the ball could be seen; the region of the eye brow was also swollen, the swelling passing towards the brow, two inches wide, and three thick; much puffed out, and the veins clearly seen through the skin. There was no pulsation, nor were the varices in any other part of the body.

As pressure and astringents promised nothing in this case, eight ligatures were applied on the venous knots, the veins being raised with a fold of skin, and tied up with it. Much pain, swelling, and inflammation followed, and little gangrenous vesicles appeared on the lower part of the eyelid. The tumefaction of the eye-lid increased considerably, with a large discharge of tears and mucus. The eye-ball could not be seen, and through apprehensions for its safety, the ligatures were loosed, from the fifth to the seventh day. This attempt proved useless; after a month the disease was more widely extended than before.

Six weeks afterwards the following proceeding was adopted. An oblique fold of the skin of the eyelid was removed with a scissors, and a bundle of varicose vessels were excised, of the thickness of a raven's quill, by means of forceps, and curved scissors, with a quantity of coagulated blood. It was necessary to stop the hemorrhage from three arteries by torsion or ligature. The wound was united by three interrupted sutures formed of pins. Immediately afterwards, an incision one and a half inches long, and half an inch deep, was carried along and parallel to the brow, in order to cut across or extirpate the swollen veins. Two arteries bled very freely, but were soon stopped, and the incision was brought together with three sutures. Lastly, three isolated venous trunks, which appeared on the forehead, were separately included in ligatures, without cutting down upon them.

Cold applications were made, and the inflammation was gone on the fourth day; from the fifth to the seventh day, all the ligatures were loosed; there was some suppuration from the wound in the eyelid, but it was much dimished. On the eighteenth day, the traces of the ligatures were yet to be seen, and two little varices were to be remarked on the lower angle of the inferior incision. By means of spirituous lotions these were lessened and got rid of; the scars were hardly to be remarked; the colour of the eyelid was still somewhat deeper than that of the other; the veins on the forehead were diminished, and the mobility of the eyelid was restored.—*Ammon's Monatshreft*, II. 1.

Gerdy *on Congenital Luxation of the Hip.*—The conclusions to be drawn from the elaborate essay of M. Gerdy, on congenital luxations, communicated by him lately to the Acad. Royale de Medicine of Paris, are as follows:

1st. That congenital luxations of the hip have an anatomical peculiarity which renders reduction possible.

2nd. Should the soft parts prove a hindrance, long continued extension will overcome it.

3rd. That as the head of the femur in old luxations, by long continued motion forms for itself a socket on the pelvis, so the same effect can be more readily produced in the situation where the joint should exist; or, as generally is the case where it is only necessary to enlarge the existing acetabulum, so as to obtain the basis of a firm joint.

4th. That the child treated by M. Pravaz, and brought forward for examination, is now in a healthy condition; the hip joint performing all its proper functions.

A Cysticercus Cellulosa, found under the Conjunctiva after an external Injury, by Dr. Haring of Ludwigsburg.—A little girl æt. 7, daughter of Herr St. R——, of M——, struck against the corner of a coop, and got thereby a black eye, which shortly after disappeared. This occurred in the Autumn of 1837. In June, 1838, her parents remarked, that her right under eyelid was swollen. The family surgeon who was sent for, found a tumour in the conjunctiva, and ordered an ointment of iodine to cause it to be absorbed. Dr. H. was soon after called on, he found a red, fleshy looking tumour of the size of half a hazle nut, split longitudinally, firmly adherent to the external canthus, and extending thence to the sclorotic; completely covered by the lower lid in the straight position of the eye.—The conjunctiva, where it passed over the tumour was very red; there was no pain; the pupil natural, the face not distorted; the parents wished the tumour to be removed.

I considered this swelling to be a sarcoma, and advised extirpation; however, it was necessary to proceed with caution on account of the probable thinning of the sclerotic under the diseased part.

As the parents wished, previous to having recourse to operation, that some other means of cure should be attempted, Mr. H, ordered a solution of lapis infernalis to be applied with a hair pencil, and advised, that if this should not manifest some good result in eight days that the knife should be employed. At the end of this period, a yellow point appeared on the outside of the tumour, and a formation of matter appeared to be taking place, on account of which, poultices were employed by the family attendant.

As these proved of no avail, on the 23rd of June an incision was made into the tumour, and two drops of yellow pus flowed out; but the tumour was not decreased; wherefore the incision was enlarged a little, when to the astonishment of the operator, a transparent body looking like the corpus vitreum appeared. The motion of the eyelid was sufficient to cause this body to be expelled. It was a round

vesicle, of the size of a pea, which proved to be a cysticercus cellulosa, when submitted to microscopic observation, as the quadruple sucking mouths, and the double row of hooks were plainly to be seen. The tumour gradually disappeared under a treatment with iodine after the removal of this parasite.

Two similar cases are to be found in the Medic. Vereinzit, 1838, and in the Neue Notizen, 1838, No. 170.—*Medic. Correspondenz-blatt*, No. XI. 25.

Abscess of the Liver with Perforation of the Stomach and Abdominal Parietes.—Recovery. Dr. Kreig of Merseberg, relates this case.—Mrs. Engelsardt, a tall brunette, æt. 38, mother of three children, the youngest of whom was 7 years of age, took ill in January, 1838, of the gastro-enterite, then epidemic here; with ulceration of the mucous membrane. Within three days the disease began to decline; every day she appeared to get better, and was able to leave her bed for an hour at a time, when an exposure to cold suddenly gave her disease the following dangerous turn.

On the first examination of the abdomen, on the 8th of January, a tumour, the size of a fist, projecting forward, and irritable when pressed upon, somewhat elastic, was perceived in the epigastrium.—The patient declared that she had this tumour already six years, and she thought it had been caused by violent straining after an emetic; it gave her no uneasiness except a feeling of tightness after frequent or plentiful meals; it had not grown larger for many years, and annoyed her alone on this account, that she could not wear a girdle, and was obliged to wear her clothes quite loose. This being the case, the treatment was directed to the fever, and little attention was directed to the tumour as it did not appear in any way to modify the course of the disease. The liver, however, seemed somewhat enlarged, and, as is usual in fever of this intermitting type here, where liver as well as spleen is commonly engaged, it was thought probable that the cause of the fever proceeded from it. No suspicions however were entertained of there being any more serious lesion, and we were unwilling to believe that the tumour could be a hernia of the stomach. However, on the 14th of February, a rigor came on in consequence of the cold above mentiened, which first occured every day, then each evening, then in a slighter degree morning and evening, and ended each time by a hot and sweating stage. At the same time the right hypochondrium and the whole right side to the shoulder began to give great pain, a severe cough came on, and the skin assumed a jaundiced appearance; the urine was scanty and saturated with the phosphates, the bowels were constipated, and the abdomen and feet began to be dropsical. Three venesections, leeches, calomel, quina, and mercurial ointment, did not prevent the approach of hectic fever. Meanwhile the tumour in the epigastrium became more painful and irritable to the touch, and had acquired the size of half a head of cabbage. Percussing it caused a tone as though it contained much air; yet was it evident that there was a large abscess of the elft lobe of the liver, to evacuate which must now be the object of

treatment. Poultices were applied, and it was evident that the skin was becoming redder and redder. On the 7th March, after having eaten some soup, she was suddenly seized with a violent fit of continued sneezing, during which a highly disgusting smell mounted, "as if from the stomach," into the nostrils. After a few seconds, a shocking taste became perceptible in the mouth, and violent vomiting succeeded of a purulent fluid, mingled with mucus, of a yellowish green colour, and most horrible stench, like the smell from the intestinal contents of a putrid body.* Shortly after discharges from the bowels of a similar nature occurred. On the succeeding days, a similar fit of ominous sneezing, accompanied by vomiting, and the same disturbance in the tumour as mentioned before, with violent coughing causing rigors. Rigors also occurred after every attempt at taking food. The patient was now in a very melancholy condition. An access of hectic fever, morning and evening, extreme feebleness, the upper parts of the body emaciated to the last degree, the abdomen and legs swollen, thirst and hunger to a painful degree, but not daring to gratify either on account of the dreadful vomiting, painful and disgusting to herself, and unendurable to those about her. There was nothing to be expected but death!

On the 25th March, Dr. King had the boldness to open the abscess. Much air rushed out, the tumour sank, and gradually a matter similar to what had been discharged by stools and vomiting was given exit to.

From this moment the condition of the patient improved. The discharge was kept up from the opening in the epigastrium by warm poultices, the irritability of the stomach decreased, vomitting gradually ceased, the alvine discharges still exhibited a yellowish brown pus mingled with fæces. Fresh buttermilk given in increasing quantities, served both for food and medicine. The febrile attacks yielded, the urine flowed in considerable quantity, the œdema in abdomen and limbs decreased visibly, and sleep for many hours refreshed the patient.

The discharge from the opening was sometimes streaked, but not in other respects changed. The abscess healed towards the end of April. A few days after the patient was worse. There were fever, tendency to vomit, purging as heretofore, and dropsical swelling of the belly. The navel projected like a hernia, and increased in size to that of a child's fist. An incision was made, and under the application of poultices, a large quantity of the yellowish green matter not so offensive as before, was discharged. Every thing now proceeded better, convalescence was no more interrupted; the incision healed, and in July the patient, though reduced to a skeleton, was able to leave her bed. Since then this patient has perfectly recovered, is able to eat any kind of food, and perform laborious tasks without any difficulty. —(*Medicinische Zeitung*, No. 9, Feb. 1840.

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* Omnino consimilia ex hepatis ulceribus promanare solent his quæ e mortuorum corporibus distillant. Ætius, Tetrabibl. III. Sect. II. c. 20.

Fatal Hæmorrhage from a Vaginal Varix. The following, curious case is related by Dr. Cramer, in the Medicinische Zeitung of the 11th of March, 1840.—On the 2nd of January, late in the evening the wife of a butcher was found by the persons inhabiting the house with her lying on the floor in her chamber, bathed in blood; she was dying. The landlord of the house had admitted a male acquaintance who had come to visit her, but who was no longer there. The surgeon called in found the woman dead. A police officer took a note of the occurrence, and the suspicious visitor was sought for and arrested.

I was required to give medical evidence, and the data were as follows.

The woman was thirty-five years old, mother of six children, pregnant, and in the opinion of her husband, advanced to the sixth month. Menstruation had for the greater part been irregular, and bleeding from the genitals had often occurred during pregnancy and whilst nursing: her mother had died from a similar cause. In other respects the woman was strong and healthy.

On the eventful evening, the visitor mentioned above, had connexion with this woman; before the act was completed, the woman cried out, "away, away," at the same time he felt a warm fluid pouring over his body; he brought her into her chamber and then left her. Her groans caused one of her children to awake, and the child roused some of the neighbours, who instantly had the husband called from the wine house, as well as a surgeon and the police. Only three quarters of an hour elapsed from the coming of the visitor till the woman was dead.

At the inquest held on the next day, the surgeon stated his opinion, that it was probable that the woman had died of hæmorrhage, caused by abortion. However, no fœtus had been found; but it might have been removed with the coagula of blood. It appeared less certain that the view of the husband might be correct as to his wife being six months gone with child; for in such case it is likely the abdomen would have been fuller and larger. Dissection alone could prove the truth, and it was accordingly referred to.

Externally there was no appearance of violence; few cadaverous ecchymoses, the body white as wax; prominent, and a hard body to be felt within it; very little enlargement of the veins of the legs; on the thighs and private parts there was some blood.

On separating the *labiæ pudendi*, a lacerated wound was perceptible under the clitoris, and to the left side towards the left nympha; it was about an inch long, passed from above, downwards, and from before, backwards, and was situated in a flattened varix: a large sparrow's egg could have been placed in the cavity thus formed. In and about it was some fluid blood. In the relaxed vagina there was not a drop of blood. The os tincæ was so far closed that the finger could only be made to pierce it by the employment of some violence. The ballottement of the child could be distinctly felt.

The uterus extended above the navel. On opening the abdominal

cavity this organ appeared like a pale loose sack; on incising it on the anterior part the placenta appeared, which was fixed near the os uteri, but did not touch it; it was adherent and uninjured, as well as the membranes: a fœtus of about six and a half months was removed, with nails and hair, and having the testicles in the scrotum. Some swollen veins were found upon the uterus; all organs in the abdomen and chest were normal, but nearly bloodless; the head was not opened, the cause of death was however made evident.

In Siebold's Journal fur Geburtshulfe, a nearly similar case is described, the varix bursting during delivery. (Vol. IX.)

Another is described by Dr. Heinmer in Smallkalden, (Neue Zeitschrift fur Geburtshulfe, von Bush, D'Outrepont and Ritgen, Bd. 5, Ht. 3,) in which the varix situated in the vagina burst during labour, and caused almost instant death.

(*Medicinische Zeitung, 11th March,* No. II.)

Treatment of Delirium Tremens. By Dr. Ware. Boston, April, 1838.—All these cases were free from combination with acute disease, with one exception; in this there was inflammation of the arachnoid membrane of the brain, as determined by dissection. This was fatal. Four patients were bled, and all of them recovered. Of the whole number twenty-nine, one died.

The results of the different methods of treatment will be more readily compared, if they are thrown together into a tabular form:

Treatment.	Number of Cases.	Bled.	Died.	Recovered.	Complicated with acute Disease.
Opium, large doses, .	8		4	4	1
" small, ...	7	1	2	5	1
Emetics,.	12	1	1	11	2
Bleeding, ...	2	2		2	
Eclectic, ...	9	5	3	6	7
Quinine, ...	1			1	1
Mercurials, ...	1			1	
Expectant,.	29	4	1	28	1
	69	13	11	58	13

It appears from this statement, that of fifteen cases in which opium constituted the principal remedy, six died; whilst of fifty-four in which opium was not used at all, or only incidently in small quantities, only five died. Still further, if we separate from these fifty-four, the nine cases in which the treatment was eclectic, and in which the mortality seems to have arisen from the combination of acute disease, we have a remainder of forty-five cases, of which only two were fatal.—Again, if we compare the mortality of those cases in which opium was pushed to the full extent advised by writers on this disease, with those in which no active remedy was employed, we have a mortality of one in two, against a mortality of only one in twenty-nine.

This difference in the results of treatment would seem altogether

too great to be attributed to accident, and goes far to establish the truth of the opinion formerly expressed, that opium given in large doses is actually injurious to patients labouring under delirium tremens. But even admitting it to be possible, that the great proportion of fatal cases occurring where opium was used, was accidental, it certainly, I think, will not be contended, that the favorable termination of the cases not treated by opium, was also owing to accident. And it will certainly follow, that opium, if not actually injurious to these patients, is at least useless, and that our success in this disease will oe sufficiently satisfactory without it.

The examination which has been made of these cases, has led me to the notice of some other circumstances relating to the history of delirium tremens, which it may be worth while to record.

And first, it appears, that a case of this disease is not often fatal, unless some other affection is present, which is in itself dangerous, and liable, even without its complication with delirium tremens, to prove fatal. Of the eleven fatal cases above recorded, seven or eight were of this character. It is not, however, always in our power to be certain of the existence of such a combination, since the effect of the delirium is to absorb or overshadow whatever other affection may coexist, and thus to obscure its symptoms and prevent us from recognizing its presence. It may have been possible, therefore, that in the other fatal cases where no such combination was apparent, it may have existed. But it is still worthy of remark, that of the fatal cases occurring among patients who were presumed to be free from any such combination, two, if not three, were of those subjected to the full opium practice.

2. In three of the fatal cases, death took place after the patient had slept. We have been taught to rely on the occurrence of sleep as a pretty certain indication of a favorable termination. It would appear, however, that to this indication there are many exceptions. Neither is the occurrence of sleep in favorable cases always followed by a termination of the paroxysm. Eight patients slept more or less during the continuance of the disease; awaking to exhibit all the symptoms which had previously existed.

3. Convulsions have been considered an unfavourable symptom in delirium tremens; but of nine patients in whom they occurred, only two were among the fatal cases. I will not assert positively, that all the instances in which they took place were noted, yet I do not think they were often omitted. Especially, it is probable that they were not overlooked in the fatal cases. Hence, if there be any error, it is one that would diminish rather than increase the ratio of mortality among the cases presenting this symptom.

4. General blood-letting has been usually regarded as inadmissible in the treatment of delirium tremens, and is, by some, thought highly injurious. Thirteen patients were bled from the arm, at some period in the course of their disease; of these, only two died, and these were both affected by peripneumony. This would seem, at least, to show, that bleeding is not a dangerous remedy, since the cases in which it was employed were principally those in which there was a combination of some acute disease with the delirium; in which

class of cases, as already observed, very much greater danger exists than in those in which the delirium is uncombined.—*New York Journal of Medicine.*

Note from Mr. Carmichael.

Rutland-square, Dec. 20th.

Sir,—In the reports of the proceedings of the Pathological Society, published in your Number for July, I observe that my observations on a case of tumour of the breast, a cast of which I exhibited, have not been accurately given; I did not operate in the case, as stated. I may refer to my writings and lectures on this subject, in which I have given it as my opinion, that malignant and medullary masses should not be meddled with.

Your's sincerely,

R. Carmichael.

To the Editor of the
Dublin Journal of Medical Science.

MISCELLANEA.

Mr. Warburton's and Mr. Hawes's Bills for Medical Reform.—We have looked over these lengthy documents, and also examined some analyses and abridgments of them, and yet we are in doubt whether we fully comprehend the complex system which they propose to substitute for the present state of things.

As medical men, it is our practice to endeavour to learn the nature of a disease, and having ascertained this, we next attempt to devise a remedy. If the case should not admit of being thus completely dealt with, we endeavour to find out the symptoms in detail, and to encounter them by appropriate palliatives. We should expect, that in medical reform at least, a similar proceeding would be adopted, and that an attempt would be made to investigate the nature and amount of existing evils, and the probable efficacy of the means proposed for their alleviation; but no—medical reform is the name for a more speculative change, an untried experiment, for altering the present state of things, the good and bad indiscriminately; often abolishing the former and retaining or increasing he latter.

In perusing the operose machinery of Mr. Warburton's registration system, we have often asked ourselves, *cui bono,* what object would be attained by presenting to the public the ponderous volume formed by the registry? We do not deny, that a plan whereby the electors of charitable institutions, and the public at

large, might be enabled to distinguish the best educated class of medical practitioners, would be fraught with advantage; but we defy even Mr. Warburton himself to ascertain this from such a document as his registration roll would present. On the contrary, we are certain that it would have the effect of increasing instead of diminishing one of the evils of our present system, namely, the mode in which practitioners of all classes, the well and ill qualified, are confounded together, and put on a level.

Mr. Warburton so far differs from other medical reformers, that he considers our present institutions, for granting diplomas, too few instead of too many, since he proposes to add three to the number. Mr. Hawes would, as it appears to us, to a certain degree supersede existing institutions by his new system. To both these gentlemen we reply, "if existing institutions answer the purpose, there is no necessity for the alteration. If, however, corporate corruption, and regard to the selfish interests of individuals have marred the objects of these institutions, there is no reason to suppose that such mischiefs would be less abundant in the new Faculty, than in the old colleges." Mr. Warburton's plan would increase the corrupt bodies of the United Kingdom by three; and Mr. Hawes proposes a new institution which, possessing the powers accruing from monopoly, would not, it may be supposed, be remarkable for its purity.

We do not profess to be politicians, or to deal with the question of representation, either in parliament, or in municipal corporations; but *of this we are certain, that the representative system is not at all calculated for medical institutions.* To say that the system would be a mere experiment, is comparatively a trivial objection; every anticipation must be as to the probability of direct mischief arising from such a proceeding. At present there is unfortunately but too much discord and display of bad feeling in our profession; but, as yet, party spirit and politics have had little or nothing to do with the matter. Introduce, however, the representative system, and every town in the empire, (in Ireland at least,) will be the scene of medico-political anarchy, and the far-lauded "Faculty" will merely be the arena for the medical demagogue; for it requires but little penetration to foresee, that impudence and blustering, and not professional eminence, would be the passport to a seat in the new assembly. Politics and medical reputation are in general heterogeneous articles, *and the politician is rarely a skilful, or, at least, an employed practitoner;* yet it is precisely such a character that would qualify him, under the representative system. If medical men are to steer clear of politics, and this seems to be agreed on, let them have nothing to do with representatives, and being represented. The best judges view elections in medical institutions, although sometimes necessary, as necessary *evils;* and consider, that the fewer they are, the better for the welfare of the establishment.

Let us not, however, be branded as the enemies of medical reform; we are, on the contrary, staunch reformers. We would eradicate and weed out every ascertained abuse or evil. We admit,

that there are many defects in medical education, that the show is often substituted for the substance, and that, according to the certificate and diploma system, the idler may be presented to the public under the guise of the plodding, over-worked student; and the ignoramus, as the well-qualified physician and surgeon. This arises, not from the want of "one uniform system of medical education throughout the empire," but from the systems at present in existence being already too uniform, similar, nay, identical in name, while they are in reality altogether different. As of certificates, so of diplomas, all vouch for the skill of the possessor, and the public is left in the dark as to the difference between the skilful and the unskilful; nay, worse than in the dark, for the title and bombast of the diploma are calculated to lead astray as to the real qualifications of the practitioner.

All the plans of medical reform we have seen (with one exception) leave this glaring evil of our present system untouched. Indeed, many of them would have the direct effect of increasing instead of diminishing it, by synonimizing and equalizing, and thus putting out of the power of colleges, boards, or teachers, even to have the name or appearance of doing their duty when they do perform it. To make it the interest of all parties to do their duty to the public, is, indeed, the mainspring of genuin emedical (and, indeed, of every other) reform; nor do we despair of seeing measures for this purpose yet submitted to the legislature.

Mr. Warburton proposes, that all medical practitioners shall be entitled to recover "reasonable" remuneration for their professional services. This is, so far, well; but Mr. Warburton ought to have known, that the ordinary legal proceedings are so irksome that few of the practitioners who are already legally entitled to sue for their fees, are willing to submit to the "reasonable" arbitration of a jury, formed of our customers, and from which we are ourselves excluded. It would have cost Mr. Warburton but little trouble to have struck out a scale, by which all medical men might be certain of a moderate recompense, in case of their time being taxed either by public authorities, or private individuals. In the higher walks of the profession, a guinea per half-hour visit, and per mile, is the usual fee; and we think, that every member of the profession ought to be enabled to seek, by as summary a process as the law allows in debts of similar amount, a remuneration equal to at least one-half of this sum. Of course, such an enactment should neither interfere with private arrangements between patient and doctor, or entitle the medical attendant of a charitable institution to any remuneration beyond his salary, for services rendered as a part of his duty; it might, however, save the practitioner from many harassing and fraudulent encroachments on a time, which is, after all, as valuable as in any other profession or occupation, however slightly a portion of the public are in the habit of estimating it.

We would propose the following petition:—

To the Queen's most excellent Majesty, the Lords Spiritual and Temporal, and the Knights, Burgesses, in Parliament assembled. The Petition of the following Medical Practitioners

HUMBLY SHEWETH,

That your Petitioners have perused two proposed Acts of Parliament, for the regulation of the medical profession, which were printed during the last session.

That it seems to your Petitioners, that the provisions of these acts are based on theory rather than experience; that they are not calculated to amend existing evils, and that they are likely to substitute, for the present system, one in which abuses will be retained or aggravated, and existing advantages relinquished.

Your petitioners, therefore, respectfully submit, that neither of the proposed Acts of Parliament ought, in their present form, to pass into a law; and they humbly solicit that your, &c., will be pleased to proceed accordingly.

And your petitioners will ever pray.

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